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ISSUE 218
MARCH 2000
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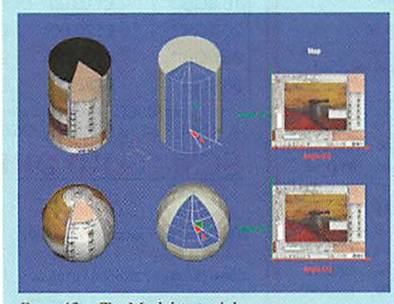


March 2000 ACORN USER

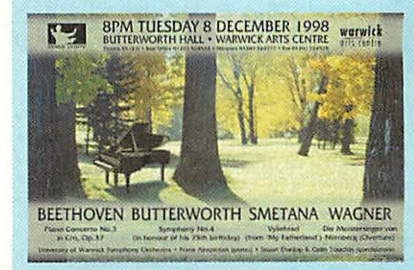
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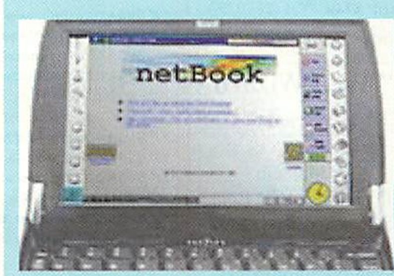
April issue on sale 16th March



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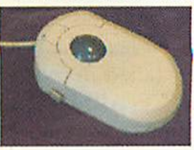
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ARM gets Crusoe-fied

Some of the smarter among *Acorn User*'s readership will no doubt have invested in some ARM Ltd shares. The value of their investments was rocked temporarily by news in January from the US about a new and very smart low power microprocessor technology. Intel, the guardian and developer of StrongARM technology, was hit even harder.

This wasn't a highly topical 'pump and dump' scam on the Internet. The company giving Intel and ARM management headaches is called Transmeta Corporation. Its backers include Linus Torvalds of Linux fame, international financier and billionaire George Soros and, no less than Paul Allen – along with Bill Gates the original co-founder of Microsoft. If that's not enough, IBM is said to be lined up to begin manufacturing the chips later this year. Transmeta's product is a software controllable microprocessor called *Crusoe*.

The Financial Times ran a splash headline story declaring that *Crusoe* represented a breakthrough in processor technology. However, the story was full of holes. In saying that Crusoe could thwart Intel's ambitions in the mobile computing arena, they failed to link this threat to the part of Intel it was aimed at.

Intel has two mobile processor product lines – Mobile Pentium (for PC laptops) and StrongARM. Mobile Pentium is an expensive, high power consumption monster of a chip. StrongARM is primarily aimed at much smaller battery powered devices (Risc PCs excepted) and has one of the industry's leading computing power to electrical power consumption ratios. StrongARMs are very small and cheap to produce. It's easy to suppose that Transmeta's Crusoe chip is aimed at StrongARM, which is probably why ARM Ltd's share price was hit.

On closer inspection, *Crusoe* is another PC-compatible chip and even Transmeta's own figures show that it's not in the same league as StrongARM when it comes to MIPs/watts efficiency. *Crusoe* is aimed at PC laptop users and similar devices. It's a clever chip because controller software monitoring battery performance, application resource demands and other parameters can dynamically adjust the chip's voltage and speed to keep power consumption down without outwardly affecting performance in the user's eyes.

Funnily enough, in the same week Intel revealed its latest Mobile Pentium *SpeedStep* processors, which work in a similar fashion to the Crusoe, but in a much more crude and simple fashion. But crucially, *SpeedStep* is shipping now and *Crusoe* is still a prototype.

From *Acorn User*'s point of view, it would seem there is little to fear from *Crusoe* as it appears to be aimed at a different market. The only potential threat is that *Crusoe* could spawn more Psion Series 7/netBook competitors running Windows. But, anyway, Microsoft itself has tried and has so far largely failed in that arena with Windows CE. ARM's shares have, at the time of writing, recovered.

RISC OS at BETT 2000

For the second year running, this year's big annual educational technology show, BETT'2000, was graced by a reasonably strong RISC OS presence. It's not the good old days with Acorn's ambitious and huge white and green stand designs or even the more recent Xemplar efforts. However, Acorn licensees, Castle Technology had invested in good-sized stand on the main floor of the exhibition at London's Olympia. This was in contrast to their smaller stand slightly hidden away on the gallery level last year.

We also spotted Spacetech, glittering with digital cameras and RiscStation Ltd making its first appearance, albeit in a small last-minute stand, just after the initial shipments of its new RISC OS-compatible family. Elsewhere friends of the RISC OS community present at the show included SoftEase, Argosphere and Atomwide.



The staff on Castle's stand reported a good deal of interest in their latest packages. Also on the stand were Icon Technology and Cannon Computing/ Cumana Ltd. A Citrix client/ server system running Windows on RISC OS hardware was being displayed by them. Paul Middleton, RISCOS Ltd's Managing Director, was also present on the Castle stand brandishing his latest success story – a Psion Series 7 which will soon be running RISC OS.



More on this is in a separate story in these pages. Oregan Networks, who have been doing much in the area of network computers, were also present.

RISCOS Ltd lands Psion deal

In the past we've had Psions with Acorn badges – but now we're going to get the real thing: Psions running RISC OS. RISCOS Ltd boss, Paul Middleton, has signed a deal with Psion which gives RISCOS Ltd the green light to port RISC OS 4 to the attractive StrongARM-powered Psion Series 7 sub-notebook.

This news will remove some of the frustration suffered by those who have been waiting for the elusive Peanut notebook from Interconnex. The Peanut was first shown publicly at the 1998 Wakefield show and it's at the 2000 Wakefield show between 20/21st May that Middleton hopes will be the first big showcase for a RISCOS Series 7, if only in prototype form.

While last autumn's RISC OS '99 show at Epsom saw a Windows CE sub-notebook mocked up with a RISC OS desktop image, there's no trickery in the Psion deal. RISC OS 4 will be tailored for the hardware environment of the 100MHz StrongARM inside the Series 7 and will be loaded using a PCMCIA Flash ROM card.



The Series 7 project is not as odd as it first appears. Sure, there will be a small but strong market for Series 7s fitted with RISC OS. But as the Series 7 uses a more up-to-date version of the StrongARM platform with technical issues representative of future ports; the experience in moving RISC OS 4 to this machine will provide valuable experience for RISCOS Ltd software engineers.

If you need a reminder, the Series 7 is the cheaper and slightly cut-down version of the Psion netBook. It sells for around £580, has 16Mb RAM as standard and a 256 colour STN LCD screen. Although sharing design cues laid down by its smaller sibling, the Series 5, the 7 is no longer a pocket computer but a very compact sub-notebook. As with the 5, the 7's screen locks into place when opened so you can use the touch screen pointer stylus confidently and it has an excellent keyboard. It has irDA wireless connectivity and a serial port, but there is no USB port at present. A Compact Flash slot supplements the Type II PCMCIA slot. The Series 7 weighs just 1.15Kg (2.5lbs) and can operate for over eight hours on single battery charge.

Middleton told *Acorn User* that the proposal to Psion had taken a very long time to be processed. With Psion launching new models, like the Revo, and busy with its Symbian software subsidiary, it was only to be expected that relatively minor business would be a low priority for Psion management. That a proposal from a small independent company to port their OS to one of their models was approved at all is sign of changing times as Psion was almost as arrogant as Acorn in the bad old days when it came to talking to third parties like RISCOS Ltd.

Space-age Internet access

Spacetech is developing a satellite-based Internet service package for RISC OS. Typical download speeds are said to be 2Mbits/sec. That's 32 times faster than a single 64Kbit/second ISDN channel, about four times faster than cable modems – which are largely vapourware to date in the UK anyway. DSL (digital subscriber line service) is more competitive, but there again, practically nobody has access to it in the UK yet.

Satellite Internet is an attractive option, but it doesn't make your modem or ISDN line redundant. Some traffic from your machine to the service still needs to travel down ordinary land lines, so uploads – for example – aren't accelerated.

Spacetech is charging £19.95 subscription per month with 10Mb web space and 5 e-mail addresses

More information is available from Chris Hornby at Spacetech, tel: 01305 822753, e-mail: chris@ spacetech.co.uk.



Three megapixel barrier broken

A major milestone was passed recently by Canon with the introduction of its Powershot S20 digital camera. The S20 is the first digital camera to ship with a native picture resolution of over 3 million pixels. In fact it sports 3.3 megapixels, a more than 50 percent improve-ment on Canon's outwardly similar 2.1 megapixel S10 model. Despite the S20 packing such a big pixel count, just like the S10 it's a very compact design with a good range optical zoom.



Twelve months ago most of the main camera makers were just starting to introduce 2Mpix resolution digital cameras. Until then, 1.3Mpix and a raw picture resolution of 1280x960 was fairly typical. The 50 percent jump to 2Mpix boosted this to around 1600x1200. At last, you could achieve a 300dpi (image resolution) print at close to the 4-inch wide size and quality you would expect from conventional film developed by your photofinisher.

Canon's news puts into touch predictions from the industry itself that 2Mpix image sensors in digital cameras was a detailed as you needed to go. Olympus previewed their Camedia C2500L at CeBIT in Germany, last March. This sported a 2.5Mpix CCD (charged couple device).

Conventional 35mm film is reckoned to be equivalent to 10Mpix in raw resolution terms so 3.3Mpix is only one third of that, but every bit helps. While digital cameras are getting very good at general detail in an image, very fine and regular detail like grass or carpets, for example, can still look unnatural. It will be interesting to see if 3.3Mpix finally licks this particular problem.

Pricing had not been set at press time. Canon's excellent Web site is at http://www.canon.co.uk.

Club news

Last month we asked clubs and user groups to get in touch, previewing their calendar of events. To recap, we usually get lots of bulletins about meetings. Although *Acorn User* has a slightly shorter publication cycle than most monthly magazines (we publish every 4 weeks rather than monthly), we need up to 6 weeks lead time to ensure the event hasn't already been and gone by the time the next issue of *Acorn User* is published.

Derbyshire Acorn Risc Club (DARC) has been in touch and its 50 or so members meet on the second Monday of every month, except August, at Duffield Parish Hall St. Alkmunds Church Duffield, (just north of Derby) Derbyshire. Meetings start at 7:30pm. The club recently purchased a data projector, so everyone has a brilliant view. Anyone interested in Acorns and RISC OS is welcome.

Membership is £15 per year and family membership is £20. Non-members can pay a nominal £2 to attend a meeting. Membership includes a monthly newsletter, access to a discount scheme, and a large PD library. Also, a digital camera, Zip drive and Datasafe backup devices are available for loan. Technical support is available and the club is a registered RISC OS4 installer.

On 13th March, the club meets Nicholas van der Walle of Cerilica. On the 10th April, it's the AGM with guest Roy Heslop from CTA and, of course RiscStation Ltd. On 8th May, the DARC guest is Simon Abbott of Reflex. For more information, check out the DARC Web site at http://homepages.enterprise.net/julianp/darc/, or email: darc@aaug.net

Maps on your Web site

Malcolm Boura of ARMage software has announced a freeware Web utility for incorporating OS (Ordnance Survey) map data into your Web site.

Provisionally called 'Build', the program takes OS mapping data (uses Ordnance Survey grid references) from a number of databases (CSV) and Draw files and processes them to generate HTML. The HTML comprises a GIF image, image map and a table.

Example pages produced using Build can be viewed at http:// www.armage.demon.co.uk/nuff/maps/index.html. Don't forget there are licence restrictions concerning the use of OS map data.



Have you heard about this new magazine *RISC World* published by APDL? It's on a CD.

Silly idea if you ask me. Who's got a CD-ROM drive anyway?

Well, you and I have for a start. So do most people with RISC OS computers now.

S'pose so. But if it's on a CD I bet it'll be full of old demos, out of date games and stuff like that.

No, it's a proper magazine, it's just on a CD 'cos that keeps the price down now printing and postage costs so much. And on a CD articles and reviews can be bigger and more detailed with lots of screenshots and stuff without adding to the price. With a printed mag – especially if it's in colour – the more pages, the more it costs to print and distribute.

But it's bi-monthly, not monthly like the others. By the time we get it the news will be out of date.

So when did you last get the hot news from a magazine? You get it from the Internet, then see the mags to find out more and read the reviews later. With most mags, by the time you read it it's months out of date anyway, so six big issues a year instead of twelve little ones makes sense.

I suppose so, but if it's being published by APDL it's probably going to be full of articles about them and all the stuff they do and anything competing won't get mentioned.

I doubt it. It's completely separate from APDL, with its own editor, David Matthewman. He knows what he's doing and won't let APDL interfere. APDL are just putting up the money and sending out the CDs. Daft, if you ask me. I don't see how they can do it for only £17.90 a year. They'll probably lose a fortune. Who needs another magazine, even if it has got lots of new ideas and is much cheaper than anything else? Anyway, I'm not giving up my *Acorn User* subscription.

No chance, neither am I. But are you going to get RISC World?

Already sent off my money. Can't wait. At that price, I can afford both.

Yeah, me too. Saw it on the Net. At £17.90 for six CDs you'd be a fool not to, wouldn't you?

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39 Knighton Park Road
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London SE26 5RN

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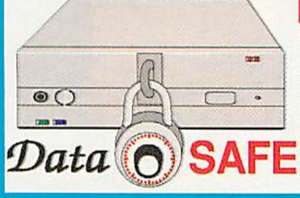
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DataSafe is highly praised, but there's been one criticism. People would like it smaller and lighter so carrying between home and office (or school) is even easier. So we've introduced the DataSafe 'mini'. With all the features of the standard version, this uses a 2.5" drive so it's very small, about 5" by 5" and less than 2" high, and weighing only about 14 ounces! Prices start at £109 without a drive or with a 1.8 Gb drive just £189



HardCash gets an update

It's been over two years since news of RaspSoft's *HardCash* RISCOS Payroll System software package graced these pages. Back then we covered version 1.37. Now RaspSoft has announced the latest version 2.16. RaspSoft claims, with some justification, that *HardCash* is the ultimate RISC OS payroll system. It's simple to use yet very powerful.

The HardCash feature list has certainly grown: Full Tax and N.I. calculations, including Directors N.I. Weekly, Fortnightly, 4weekly, Monthly periods.

Calculates P.A.Y.E., DIRECTORS, SC60, 715. Vehicle Taxes, Fuel allowances. Global Tax Code updates. Exports user defined CSV files and directly into *!Prophet*. Keeps track of SC60 payments. Time can be Hours & Minutes or Hours & Decimal. Wage slips can be standard TAS, SAGE, HARDCASH, or user defined. Screen layouts as standard P.A.Y.E. and N.I. documents. Employees can be grouped into separate departments. Create time sheets and rota sheets. Prints various wage slips, P14/P60, SC11, Bank giro, Employee details, P45 (A4 type), Inland Revenue monthly returns. B.A.C.S. transfer documents for most banks. Pension details, Holiday details, Archive sheets. Cash breakdown for your bank and on payslips. Rota sheet and time sheet details. Individual totals for each department.

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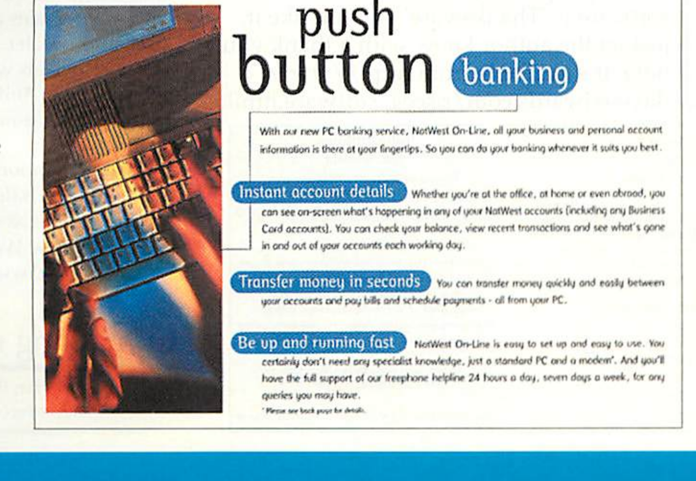
If that's not enough, there is more information at RaspSoft's Web site: http//:www.argonet.co.uk/business/s.dine. A downloadable demo version is also available there. RaspSoft's e-mail address is: raspsoft@argonet.co.uk. Tel: 0113 252 1767.

RISC OS at Natwest?

We'd love to report a multi-million pound deal seeing Natwest Bank converting to RISC OS. That may be a pipedream, but at least Natwest's brochure designers like Acorn A4 laptops. Here's one featured in the art work of a current brochure covering their online banking services.

The screen shows the Task manager and Acorn logo, the palette icon and the battery icon, which shows the machine wasn't fully charged.

If anyone can shed any more light on this, please get in touch and our thanks to Mr M Highton for spotting this!



Air traffic control rumours

This story sounds highly unlikely – but who knows? For example, prior to the RISC OS'99 show in Epsom, the last thing we expected to see was a Risc PC controlled radar system, but there it was. So, what sounds so unlikely? Rumours on the Internet newsgroups that the new Hong Kong airport uses RISC OS to help run their air traffic control systems. We know that Acorn kit has been used in the Hong Kong stock exchange in the past, but that was several years ago.

Apparently, the Chinese government, which now runs Hong Kong, is anti-Microsoft (not a huge surprise). A RISC OS application to run an air traffic control system isn't technically out of this world – but it's not the obvious non-Windows choice in the tough commercial world of IT systems. If anyone can shed any light on this rumour, please get in touch via news@acornuser.com.



Acorns going strong in Romania

The most enterprising D.Walder of Minehead Middle School has had a great deal of success installing old but fully functional Acorn computers in a school in Romania. "I recently took a load of Beebs to a school in Romania and set up their first computer room. This means that they can now use computers in their 'Infotech' lessons rather than simply writing about them," explained Walder, adding:

"I thought that this trip was to be a 'one-off' but on my return to England I've been given a number of A3000's, 4000's and various bits and bobs." So it looks like a follow-up trip to install a more advanced network is on the cards. "I can make up a small network with what I've got, but if I'm going to take them over I might as well try and get as many as possible." Walder wants to put as much value into the exercise as possible. "Basically I need more network cards, RAM upgrades, cables, mice and so on. If you can help, or know a man who can, please contact me with your possible donations." You can call Minehead Middle School on 01643 704191, or email dwalder@mineheadms. somerset. sch.uk. We wish the project all the success it clearly deserves.

Wheel mice need help

Stuart Tyrrell needs some testers for his latest product, support for Microsoft-style 'Intellimouse' mice which have dual-action centre scroll wheels as middle mouse button. Stuart already sells PS2Mouse/PS2Mouse+ interfaces and the hardware already supports wheeled mice in two ways: so-called 'Compatible' which provides movement of the pointer via wheel rolling, but does not require specific software and 'Driver' which requires extra software for more advanced functions, like auto scrolling.

Stuart is now distributing a beta version of the latter. It will eventually be available to all free of charge. If you'd like to test the preliminary driver, please e-mail ps2mouse@stdevel.demon.co.uk with brief details of your machine, mouse interface and mouse. Stuart Tyrrell Developments Web site is at: http://www.stdevel.demon.co.uk

SiteMatch update

SiteMatch is a utility to synchronise your uploaded Web site with a local copy on your computer's hard disc. Version 1.05 of *SiteMatch* is now available. The main changes from the last version are a choices file and the ability to use *FTPc* as well as *sFTP* – you need one of these free FTP access programs for *SiteMatch* to work. You also get a graphical display of your site, the ability to display those files that have been added, changed, deleted or are unaltered, you can save out a text file of the changes, up to 20 sites can be tracked, each holding 1000 files, you can delete files on the server that have been deleted locally, plus you can *chmod* perl scripts to any permission you choose (and if you don't know what that means, you don't need it).

SiteMatch is still undergoing development, so feedback, suggestions and bug reporting are welcome. The software is 'Thanksware' – if you like it, just let the author know with a thank you note. It's available from http://www. dave-edwards.com/riscos/software.html.

In brief

RISC OS 4 PC Pro warnings

Aleph One have issued a warning that *PC Pro2*, and earlier, users who have upgraded to RISC OS 4 should switch to *PC Pro* version 3.03 or later. The official statement reads: "Further changes to RISC OS 4 with the RO4patch4 causes even more potential problems for *PCPro2* users.

Using *PCPro2* with RISC OS 4 is not supported by Aleph One Ltd. *PCPro3* superseded *PCPro2* before RISC OS 4 was released and all RISC OS 4 users should ensure that they use *PCPro3* version 3.03."

Aleph One support:

tel: 01708 403028,
Web: http://www.aleph1.co.uk

Calligraph users self help

Richard Torrens (of 4QD who, incidentally, helped in the design of the *Robot Wars* house robots) has kindly set up a self-help Internet facility for users of Calligraph printers. He explains: "Now that Calligraph are no longer trading, I have set up a mailing list so that owners and users can be a mutual self-help group."

In order to subscribe, all you need to do is e-mail calligraph@ 4qd.co.uk, with the word 'Subscribe' in the subject line. To unsubscribe, repeat the process, but with the subject line word "Unsubscribe".

Changes at Simnett

Tom Simnett has changed the name of his company from Simnett Computer Services to Simnett Technology. He stresses that the company remains an Acorn and RiscStation dealer.

He also deals with Web Design and Computer Tuition and Training. New e-mail addresses include:

support: support@ simnett.co.uk,
sales: sales@simnett.co.uk,
enquiries: sales@simnett.co.uk and the new Web site address is: http://www.simnett.co.uk/

Contacting me

Ian Burley:
news@acornuser.com

Published by



Unit 2A, Heapriding Business Park, Ford Street, Stockport, Cheshire SK3 OBT
e-mail: enquiries@acornuser.com
http://www.acornuser.com/
Tel: (0161) 429 8902 Fax: (0161) 429 0685
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Editor	Steve Turnbull
Production Manager	Alan Jones
Art Editor	Anthony Broughton
Contributors	Simon Anthony, Alasdair Bailey, Mike Battersby, Mike Buckingham, Ian Burley, Mike Cook, David Dade, Andrew Green, Alistair Lang, Max Palmer, John Pettigrew, Jill Regan, Colin Sutton, Pam Turnbull, Paul Vigay
Account Manager	Geraldine Wolstenholme
Finance Manager	Amanda Petley
Subscription Manager	Richard Siggee
Distribution	COMAG (01895) 444055
Deputy Managing Director	Steve Turnbull
Managing Director	Sharon Henderson

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Pinxit design

We continue our series on professional designers using RISC OS, with Nick Kaijaks of Pinxit Design, a Leamington Spa-based agency with strong specialities in musical and technical illustrative work.

Pinxit (taken from the Latin "he painted this") was founded in 1996 after Nick had begun to experiment with DTP while an undergraduate at the University of Warwick, imitating designs he liked, and working on small jobs for friends for fun or the price of a pint or two.

From there, he moved on to the professionally printed advertising for a musical show he was producing in 1993, and around the same time began to teach himself HTML.

"By 1996, I was still studying at Warwick, now towards a PhD, and still designing in my spare time. I enjoyed my hobby, and the satisfaction of seeing others appreciate it, so I decided that I may as well do it properly and earn some money."

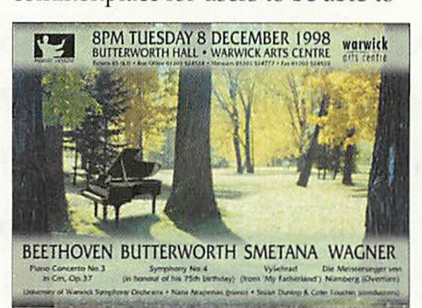
The company offers design and editing for print and web, and in 1997, Nick's confidence and skill at writing led to his role as a regular columnist for *Acorn Publisher* magazine. Some of the designs featured here were originally reproduced in Acorn Publisher and appear here with the kind permission of Akalat Publishing.

Nick's setup comprises an expanded 42Mb StrongARM Risc PC, using RISC OS 4, together with a SCSI scanner, one mono and one colour printer, and the machine is networked to a secondary Windows PC, "used for converting files, Internet work, software development and flight simulation!" His print work is outsourced to local litho and digital printers, and Pinxit rely on *Ovation Pro* for layout work, with original artwork being created in *ArtWorks* or *Photodesk*, technical work in *TechWriter Pro*, and music engraving in *Sibelius 7*.

"I've always felt RISC OS offers a much more productive working environment than PCs for design," Nick explains, "Even as a fairly experienced user of *Quark XPress* and *Adobe* products, I always feel like I'm fighting the PC to achieve my results. I think that PC/Mac software houses operate in such a cut-throat market that there's a never-ending scramble to add features, ahead of actually making sure the user interface facilitates work.

The RISC OS market can't afford to join the bloatware race, so our authors often concentrate on functional elegance even if they can't always match the feature list though RISC OS provides a good foundation for that too. Using RISC OS appeals to my design, as well as to my business sense."

The Acorn community is also highly valuable to Pinxit: it's commonplace for users to be able to e-mail application authors and have bugfixes produced in a matter of hours. Nick rightly observes that this "would be unthinkable in the PC/Mac market". As others have commented, future developments in hardware are the single biggest hope for the platform. "While my Risc PC is reliable and still feels fairly fast in action, I know it's slipping compared to the other platforms – I envy things like USB and fast, cheap memory."



Millipede's *Imago* motherboard is still the king of the wish-list, and Nick feels that, although still unfinished, Cerilica's *Vantage* "has the potential to really shine with more power under the bonnet."

Nick tends to design intuitively, judging the purpose of the design and looking for a thematic hook on which to hang the graphical style. "For example, if I'm designing a poster for a concert, I'll always work from the music – either the title, its genre or just its sentiment. I try to design things that engage emotionally with the reader. My partner, Ros, is a great sounding board and we often brainstorm together. Once I've got the theme, I usually just lay things straight up on-screen, moving them around until they feel right."

Nick's work illustrated on this page has been taken from the past 18 months, and are for a long-standing client, the University of Warwick Music Centre. Although there is some considerable stylistic variety among the pieces, it's inevitable that certain qualities remain common within the work of any one designer. Nick's choice of typography and colour is always deeply considered, and some photographic elements are taken from royalty-free stock photography collections.

"I'm a strong believer that imitation of good designers is one of the best ways to learn to be a better designer yourself. I have files full of adverts I've clipped from magazines and papers, club flyers and posters and I always keep a look-out for books on graphics and type to get new inspiration from. Keeping yourself immersed in good design gives you some hope of floating to the top."

Postscript and PDF

One of the great problems facing graphic artists on the RISC OS platform has, for some time now, been the overwhelming problems concerned with exporting finished artwork and publications to other platforms, typically for print purposes.

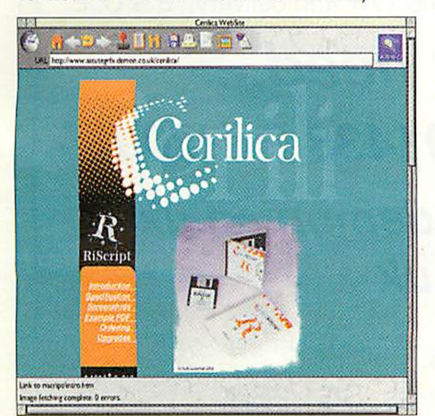
Although both *TJ Reproductions* and *Micro Laser Designs* have provided many years of essential service in offering reprographic capability directly from RISC OS application formats, many users nevertheless prefer to use more local, general repro and print alternatives. And that almost invariably has meant producing PostScript files from the original Acorn documents.

The RISC OS printer drivers provide a means of saving PostScript print images to file, but the process requires a great deal of knowledge of the ins and outs of print and PostScript production. Furthermore, it can be difficult to find local printers with sufficient expertise to deal with the raw PS print file, and the PostScript produced is some distance behind the current version used by other platforms.

Adobe's PDF – Portable Document Format – has been making considerable headway in the print industry over the past few years, and is increasingly becoming a highly important means of providing entire documents to printers, without considerable investment in learning the raw PostScript angle to document production. In fact, *Acorn User* is supplied as PDF to the printer.

Courtesy of Leo Smiers, we've had a rudimentary PDF viewer for a couple of years, and both the RISC OS port of the freeware *GhostScript* and the commercial package *RiScript Pro* have been able to deal with PDF documents but, until recently, there hasn't been any easy way of generating reliable PDF from Acorn applications. As part of the RISC OS 4 package comes a demo version of a forthcoming commercial PDF generator, *Taborca*, which works in a similar way to the generation of raw PostScript through the printer drivers.

And Cerilica's announcement of their development and distribution deal of *RiScript Pro* has brought with it the promise of straightforward generation of PDF using an improved, simple interface. It remains to be seen quite how much these two recent developments impact upon the problem of document portability from RISC OS applications, but any progress whatever – as we've seen from several of the graphics professionals we've featured in this column over the past few months – can only be more than welcome. END



Contacting me

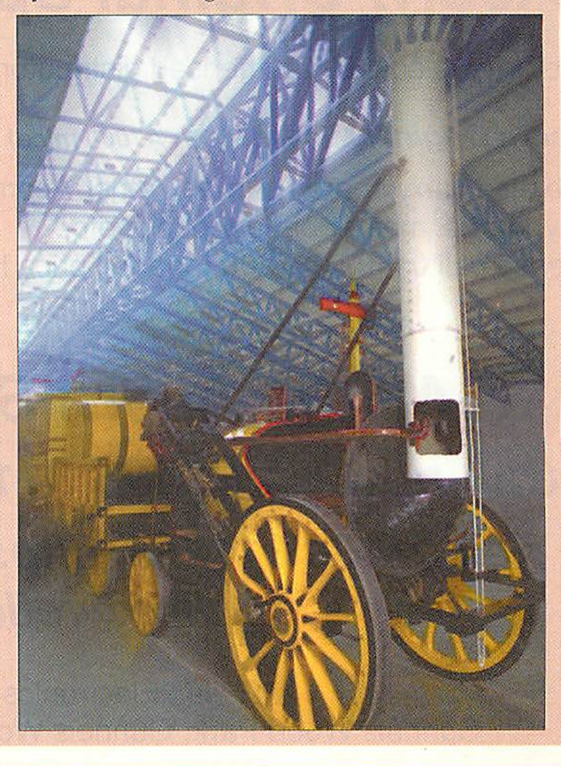
Andrew Green:
graphics@acornuser.com

Pic of the month

This month's winning entry comes from Peter Harrington, by e-mail. He explains that his composition, *Running in Time*, was taken on a 35mm SLR camera – "probably still *the* way to get pictures into a computer, and now almost 10 years old!" – and then processed extensively using *Photodesk*.

The subject is York Railway museum's cutaway reproduction of Stephenson's 'Rocket'. The museum setting meant that Peter had to remove a much bigger diesel engine from the background with skilled use of the cloning tool.

He then used a couple of special effects: Maximise Outlines (to give a Meccano-like appearance to the subject), and a Zoom Blur combined with a graduated mask to semi-protect the lower-right quarter, which provided the sunbeams and sense of movement in the picture. Peter wins a £10 cheque for his excellent submission – keep those entries rolling in!

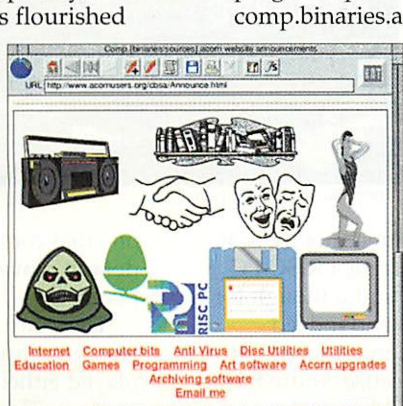




Missing – presumed dead?

Once upon a time there was a Usenet Newsgroup called comp.binaries.acorn (cba), which was created not for text articles, but to distribute program code for Acorns publically posted by programmers for other newsgroup readers to try. If you'd written a freeware program, driver or patch that you wanted other users to see and test, you posted the code to cba, and also uploaded it to *Arcade BBS* and *HENSA*.

As the online years zipped by, Internet Service Providers flourished and programmers started to use their own free Web and FTP sites to showcase their work. Gradually the centralised resources of published programming skill fragmented into many separate sites. A new kind of Web site evolved containing not the actual resources, but useful listings of links to where they were to be found on the Internet. James Sears' Acornusers.Org Web server has links to several Acorn Web sites of this type, such as the Drobe Launch pad at http://www.drobe.co.uk/ and the Acorn Cybervillage at http://acorn.cybervillage.co.uk/. But in the old style, Acornusers.Org also hosts useful resources on site, such as Paul Johnson's "cbsa" comp.{binaries/sources}.acorn pages, containing the archives of programs previously posted to comp.binaries.acorn and its sister group comp.sources.acorn. Paul's classified collection of RISC OS software is almost all that's left of the activity in comp.binaries.acorn. Looking back with Dejanews, the most recent posting I could find for cba was on 5th January 1998, with the latest posting to the sources group on 14th August 1999.



Ten years on

Since the Arcade Bulletin Board System opened in June 1990 on an Archimedes A410, almost everyone in the known RISC OS world has used our BBS at one time or another. For Acorn expert and newcomer alike Arcade BBS has been a friendly forum for hardware and software discussion, news and comment and has hosted a vast collection of software downloads. Arcade's system operators, David Coleman and I, feel honoured to have helped so many Acorn proponents to develop their hobby and skills into ways of earning a living, either in the technology industry or in third-party Acorn support companies.

For our tenth anniversary on 11th June 2000, we'd like to encourage all ex-Arcade users to call back in to the BBS just for old time's sake, where they will find that not only is the BBS still running, but also their old accounts may still be active. Forgotten passwords can be reset ahead of time simply by e-mailing david@arcade.demon.co.uk for a temporary one. Our Demon Internet e-mail gateway was used by many as a stepping stone to their current Internet literacy. Perhaps long-lost users who registered Arcade e-mail addresses will want to collect or delete what may be a forgotten but growing collection of e-mail from mailing lists from which they have neglected to unsubscribe. We'd really like to stem the flow of incoming unwanted e-mail and spam, so we need to hear from you!

Dial-up bulletin boards have played an essential part of the development of amateur and professional data communications all over the world, and while the Internet offers unlimited possibilities for the future, let's celebrate one of the stepping stones that supported us along the way.

Please join us on 11th June 2000, or sooner if you like!

Arcade BBS
Weekend Web (14:00-20:00): http://arcade.demon.co.uk
Weekend telnet: arcade.demon.co.uk
Telephone: 020 8654 2212
020 8655 4412
020 8655 1811

In brief

Web effects

!WebFX3D **from New Zealand-based Dansoft Developments is re-released with an online manual for £25, including postage, from their UK Agent in Leigh-on-Sea, Essex.** ***WebFX3D*** **is a 3D graphics tool for designing and rendering images in 24-bit colour. The 3D text creation facility has soft shadow or glow, anti-aliasing and transparency features. The program can export Draw and VRML format files too.**

Dansoft Developments UK
PO Box 1955, Leigh-on-Sea, Essex SS9 5BF, UK
http://www.dansoft.co.nz/webfx3d/

Nasty. British. Short.

Describing itself as a useful and interesting UK digest of things that happened last week or might happen next week, "*Need to Know*" is Britain's most sarcastic weekly newsletter: an irreverent and quirky comment on the week's media and computing scene.

To join, e-mail "subscribe ntknow" to ntknow-subscribe@lists.ntk.net. Avoid the fortnightly *TVGoHome* feature if you're offended by strong language.

Need To Know,
http://www.ntk.net/

Space Invader

SpaceTech Ltd are offering Internet from space with their 2Mbps satellite downlink package via ISP Eurosky for £19.95 per month inc. VAT. Until the new RISC OS machines with USB or PCI slots are available, you'll need a 133Mhz PC for the £299.99 inc VAT DVB/MPEG-2 PCI card and a satellite dish which Spacetech can supply, pointed south at Astra (19.2 degrees east).

A modem and telephone line are required for the low-speed uplink, which can apparently be dropped when receiving large files, but at 2Mbps, what is "large"? You also get 10Mb webspace and five e-mail addresses.

Spacetech Ltd, tel: 01305 822753
e-mail: sales@spacetech.co.uk

Contacting AU
David Dade:
comms@acornuser.com

DigitalCD

Written by André Timmermans, *DigitalCD* is one of the premier RISC OS music players – and indeed the default player installed on my own system. It's also come a long way since it was first examined in these pages last May.

DigitalCD will play most music files that you can throw at it, including 'sequencer' type files such as Digital Symphony, ProTrackers and ArcTrackers, Matrix, ScreamTrackers, FastTrackers, ImpulseTrackers and Multi Tracker modules. However, it's abilities don't end there. It can also play WAV and other 'sampled' file types as well as MPEG audio (MP3) files and ordinary music CDs.

The WAV playback is courtesy of Rick Hudson's *PlayIt* module which *DigitalCD* can seamlessly call when it needs to play back sampled tracks.

In use, it's very similar to the popular WinAmp/Sonique style of 'trendy' looking player available on those Windows machines that we don't talk about. Indeed, it's similarity is such that it incorporates Windows-style 'skins' for it's look and feel. For those not in the know, a skin is simply a collection of images so that you can put different styles and 'face panels' on the front, so to speak.

DigitalCD is simplicity itself to use, partly due to it's intelligent module-based approach (extra player modules can be added at any time) and also to it's intuitive user interface. Just double-click on a music file and *DigitalCD* will do it's business. Sound quality is as good as you'll get from a RISC PC (you'll need 16-bit audio though for maximum quality) and indeed sounds better than many competitive players, simply because Andre has taken the time to add a superb and flexible configuration manager to it. You can tailor just about every feature you can wish for, from how it starts up to which filetypes are recognised and even a five-bar graphic equaliser – which does make a difference to the final quality. If the built-in features aren't enough to impress you, it also supports third-party plug-ins. These mainly consist of additional effects to accompany the musical playback, such as graphical oscilloscope and VU bar displays. One major feature of *DigitalCD*, and one that contributes to making it my default player is it's ability to use playlists.



One of the more Lunatic skins…



…or how about a wood effect



The OmegaAmp skin

These are simply files containing a list of multiple files that you want played either consecutively or at random. This is invaluable if you, like me, have CDs containing numerous MP3 tracks that you want to play while you use the computer.

What's more, *DigitalCD* even supports CDDB. For those who aren't familiar with this, it stands for CD DataBase and is a way to avoid manually typing in all the tracks from your favourite audio CDs. You simply log on to a CDDB server via the Internet and the information will be retrieved based upon the identification of the CD in the drive.

Coupled with key shortcuts, snazzy displays, more than enough user preferences to keep even the fussiest user happy and efficient playback modules – MP3 playback doesn't 'jump' like some players when you move windows around the screen or temporarily do something processor intensive – I have no hesitation in recommending *DigitalCD* as a multi-format music player.

Download it now from André's web site at http://www.geocities.com/SiliconValley/Horizon/4471/dev.htm

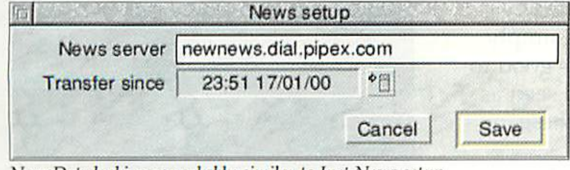


Newsdate

Time for another gratuitous plug for a small utility written by yours truly. I was alerted to a minor Y2K issue in the *ANT Internet Suite* some time before breakfast on New Years Day – being one of those irritating sober people who was up bright and early. This affects the ability to skip to a particular preset interval when fetching news messages.

For some reason setting the fetch date from 1st Jan 2000 made the timer jump to 01/01/06. Indeed, trying to set to other intervals similarly selected a particular day in year 06. Not having access to the source code, or internal workings, of the ANT Configuration utility I decided the best method would be to write a small stand-alone application which could interrogate the relevant *InetSuite* configuration file and update it accordingly – hence the birth of *NewsDate*, some time just after lunch.

Knowing Acorn users, and their impeccable eye for detail, I also took the opportunity to add a few extra date combinations such as the ability to jump three months, or even back to the original date (if you select a new date and then decide that you didn't want to change it after all). You can even jump back a year if you so wish – and if your news server keeps messages for that long. The internal calculations are based upon the Julian calendar so should be valid for the year 2000 and dates well into the future as well as allowing for the February 29th 2000 problem.



NewsDate looking remarkably similar to Inet News setup.

NewsDate is freeware and available to download from http://www.vigay.com/riscos/comms.html and works either as a stand-alone application or an *AntUtils* plug-in.

Clipboard

Here is another simple, yet invaluable, utility. This time it's from Thomas Leonard and allows you to examine the contents of the global clipboard under RISC OS. Not many people know that there really is a global clipboard, probably because not many applications have been written to utilise it, but the global clipboard works in a fashion very similar to that on other operating systems (without mentioning any names) whereby you can cut and paste text from any application to any other application.

Under RISC OS you can only cut and paste between compliant applications though, and you can't cut and paste to writable icons either. However, this is where Thomas' *Clipboard* utility comes in. Just load it onto the iconbar and from then on you can not only examine the contents of the global clipboard but also save it to disc or paste into non-compliant applications. You can also cut and paste text from writable icons so it's truly a case of killing two birds with one stone. As with most RISC OS applications, there are some additional 'bonus' features included too. By pressing Control+D or Control+E you can de-DOSify (Thomas' description) filenames; Control+D will strip off the suffix, converting a filename such as "NOTES/TXT" to "Notes" and Control+E will grab just the suffix so that the same filename would become "TXT".

Cutting and pasting from/to writable icons is via a module so you can even implement this feature on it's own if you don't require the added facility of examining/saving the global clipboard and it's associated iconbar icon. As this module works on it's own you can permanently install in your boot sequence if you like.

Clipboard is freeware, and available to download from http://www.ecs.soton.ac.uk/~tal197/desktop.php3

CalMake

As its name hints at, *CalMake* is a Calendar maker. I thought I'd give it a quick mention as it's one of those applications which is often requested by people, but like all useful applications you can never find a copy when you need it.

Usage couldn't be simpler: select the year and month you require and drag the icon to your Filer window and *CalMake* will automatically produce a simple, yet nicely laid out drawfile for the required month.

This can be dropped into another application or just printed out if you want to make your own calendar pages. As you can see from the diagram below, and naturally it's Y2K compatible.

CalMake is written by Robert Hampton and available to download from his web site at http://www.fabland.co.uk/fabsoft/calmake.html

March 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Contacting me

Paul Vigay:
pdpage@acornuser.com

Imago-

Alasdair Bailey breaks out of his cocoon

Since Acorn's withdrawal from its traditional desktop market more than a year ago now, a handful of companies have sprung up to fill the vacuum left behind. RiscStation have already started to ship their machine and Microdigital aren't far behind but this month we take a look at the efforts of Millipede.

Their *Imago* is, most certainly, the most exciting of all the new developments so far. Let's face it, the *R7500 Lite* and *Mico* are effectively turbo-charged A7000+ clones; this, on the other hand, promises to be a StrongARM Risc PC beater.

Millipede Electronic Graphics have been supplying real-time graphics production solutions to broadcast video clients for some time now. Their current customer list is impressive, not only does it include the production team behind ITV's *Who Wants to be a Millionaire?* but also Channel 4's lunchtime share-dealing fest, *Show me the Money* along with many others.

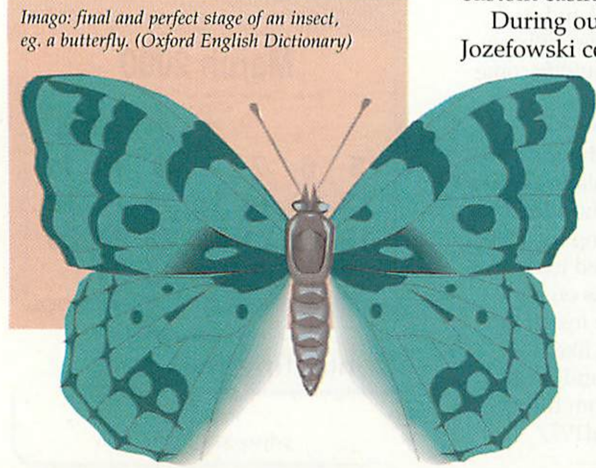
What this all means is that a Risc PC, along with the company's *Apex* real-time graphics production board, is being used somewhere behind the scenes to render and then output all the computer graphics which the viewers at home see overlaid onto the picture.

So why has this company who have already proved their worth in a real-world environment decided to stand by RISC OS technology? Richard Jozefowski, head of the project, offers this answer: *"RISC OS is a good operating system, it's intuitive, easy to use, robust, and easy to program as well. The broadcast television applications are all written in BASIC. With the turnaround time they have to develop these applications, they couldn't contemplate developing on a PC."* At the end of the day, a PC could quite easily be built to match the specification of the *Imago* but what you wouldn't get is the stability RISC OS grants to the product. People who are using computers in the production of live TV shows simply can't risk a system crash. It's good to see that RISC OS itself is still seen as the better option even after these fourteen months of turmoil.

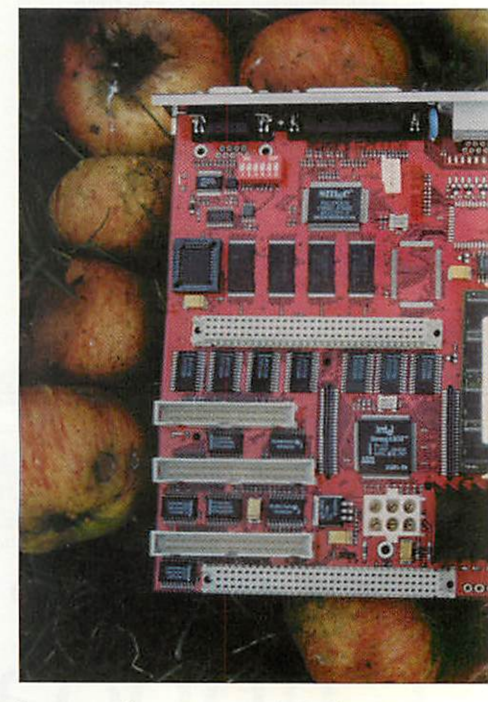
Incidentally, it is not entirely correct to describe the *Imago* simply as a Risc PC motherboard upgrade. Further, referring to it as a Risc PC 1.5, as some did after the death of *Phoebe*, is equally inaccurate. The fact of the matter is that, in some areas, this project goes further than *Phoebe* and it probably won't form a DIY Risc PC upgrade either.

Granted, the *Imago* motherboard does maintain mechanical compatibility with the existing Risc PC case but this is because many of Millipede's clients have already taken Risc PC motherboards and incorporated them into their own custom casing:

During our interview, Richard Jozefowski commented: *"[the Risc PC case] can offer quite a compact solution if you look at the amount of space taken up in a PC with both the motherboard and the vertical daughterboards, you need quite a big box. The way we're doing it, it's possible to get quite a lot of functionality into a single one unit high (1 3/4") case and for people who are rack mounting that's very important because tall cases, particularly if you're going to have more than one of them, take up a lot of racking."*



Imago: final and perfect stage of an insect, eg. a butterfly. (Oxford English Dictionary)



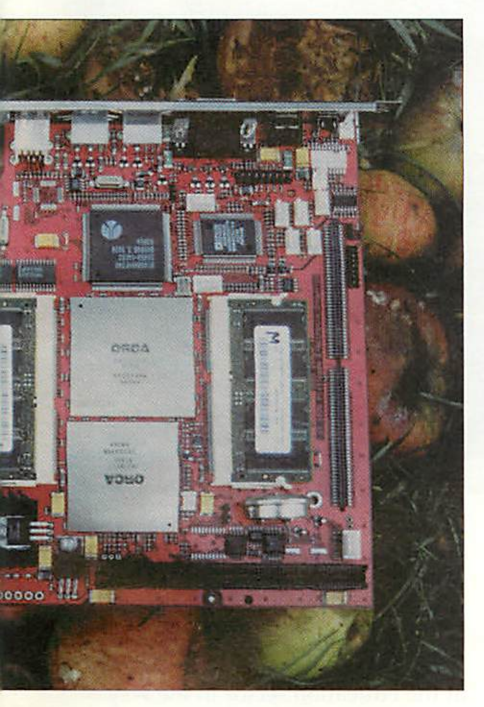
Imago takes wing

A 233MHz rev.T StrongARM chip is soldered to the *Imago* motherboard by default. This is indeed the same chip that can be fitted into existing Risc PCs. However, the memory bus, which forms a major bottleneck in the current architecture, will be four times the width it is in the Risc PC.

This will give a great performance boost which will be felt in memory-intensive operations such as graphics display and rendering. In a product designed for broadcast video graphics production, this is obviously a high priority but it will also be to the liking of games players.

Provision is also made for existing PC co-processors as well as for a small daughterboard containing a second main processor. Whether this will be put to use for a second StrongARM chip or even perhaps a dedicated floating point processor

nation



upgrade remains to be seen.

One of the main stumbling blocks encountered by all new hardware manufacturers has been Acorn's proprietary IOMD and VIDC chips. The *RiscStation* and *Mico* both use an ARM7500FE chip which includes the functionality of these chips onboard. By moving straight to a StrongARM based system, Millipede have had to spend a fair bit of time imitating the functions of these two chips. Indeed, current prototypes employ two large (and fairly expensive) FPGAs (Field Programmable Gate Arrays) which will be substituted by conventional chips in due course if demand is sufficiently high.

The specifications include 16Mb of memory capacity on built-in Flash ROM chips. RISC OS 4 only occupies 4Mb so the remaining 12Mb will be available to the user. This will be a boon to broadcast clients who may wish to operate a discless system by storing rendering software entirely in the more reliable and robust Flash ROM. Extra system stability is therefore gained by cutting less-than-perfect hard drives, with all their moving parts, out of the equation.

Risc PC-style separate VRAM has been done away with, paving the way for much higher display resolution and colour depth. RAM held on the board's standard 64-bit SDRAM modules will be shared between video and general system memory. This return to an older way of doing things should lead to a significant cost saving as well as some interesting performance boosts.

For example, a tantalising maximum display resolution of up to 2048x1536 pixels at all colour depths including 24-bit will be possible. Compare this to the 2Mb VRAM Risc PC's flicker-free limit which lies somewhere around 800x600 resolution with 24-bit colour and you can see why things have the potential to really open up in the DTP/graphics sectors.

Hardware support for the VESA DDC 'plug and play' monitor standard has already been completed though software support for this is still being worked on. Such developments on the RISC OS platform are great news: the VESA DDC standard does away with the need for Monitor Definition Files, by the monitor itself informing the computer exactly what it is capable of and allowing the machine to display permitted modes on-the-fly.

For sound, a PC-style SoundBlaster compatible chip is used. This solution seems fairly universal among the new hardware designers. Four analogue stereo inputs are provided along with two digital input channels for professional applications.

The *Imago's* IDE interface has also been optimised over its Risc PC predecessor. An UltraDMA mode is to be included which, in theory, will bring transfer rates of up to 32Mb/second. Now that's a good bit faster than current SCSI interfaces so whether any IDE devices can go that fast yet is another matter. As with the Phoebe prototypes, two serial ports are provided, though one will be an RS422/R485 interface. A connector to allow the addition of an IR (Infra-Red) communications port is also provided.

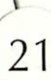
Unlike the *R7500* approach and the halfway-house solution of the *Mico*, *Imago* offers standard support for Acorn podule cards and backplanes. This is an interesting development which has no doubt come about because Millipede's existing product range is centred around the standard Acorn podule interface for internal expansion. A dedicated audio/visual expansion bus is included between the motherboard and the podule expansion cards. This is really for the benefit of the company's broadcast video production clients and will simplify the development of solutions for such users in the future.

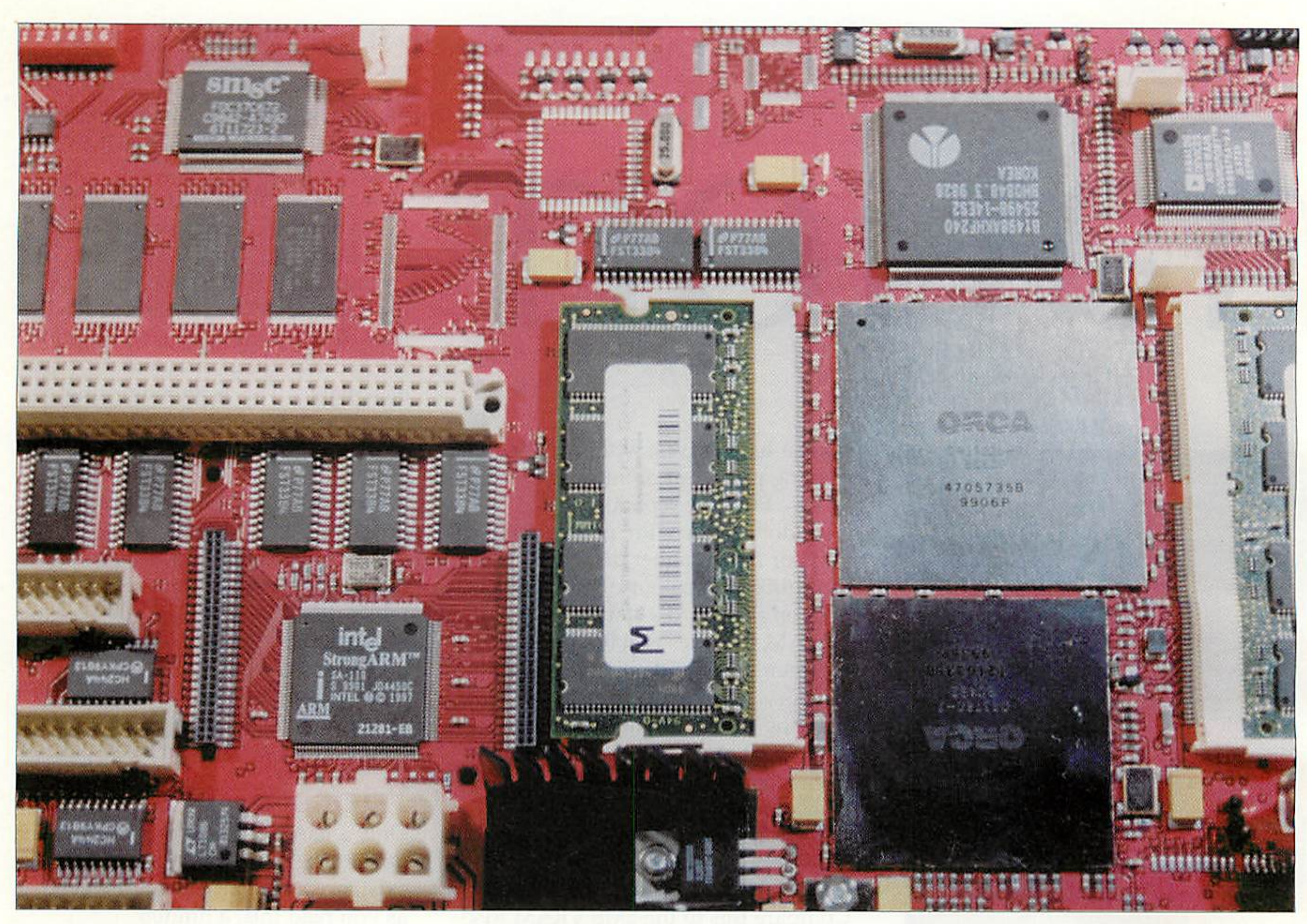
Pricing and availability

Only a handful of the attractive red development motherboards are in existence at the moment. However, as you read this, a limited production run is underway for demonstrations and sale to some broadcast customers. The main run

Main Features

- Rev. T StrongARM on-board with processor upgrade connector
- 64MHz local memory bus
- Max. 512Mb SDRAM
- 16Mb flash memory
- Max. 2048 x 1536 @ 24bpp screen mode
- Enhanced SoundBlaster-compatible sound processing
- Game port with joystick and MIDI I/O
- Built-in 100BaseTX Ethernet capability
- Dual EIDE ports to allow up to four devices
- Dual serial ports
- Dual USB port
- PS/2 mouse and keyboard interface
- Audio/video expansion bus with four real-time video streams
- Standard podule bus with enhanced data rate
- Additional decoded podule connector
- Standard processor expansion connector for PC card





won't be commissioned until the middle of this year once all bugs have been ironed out and demand has been gauged.

Once the new motherboards are available in quantity, it's likely that they'll be sold to home users only as part of a complete system in order to avoid lengthy support issues which may arise – some people are bound to get things horribly wrong. It's too early to say what case/processor trade-in offers will be made to existing Risc PC owners.

When quizzed on the pricing of the finished product, Richard volunteered; *"We'd hope to be able to pitch it at a price which would be attractive to the higher-end desktop users."* These could be seen as veiled words of caution to home users who are hoping to get a super-charged Risc PC beater on their desks any time soon.

However, Millipede do remain committed to the home/small business user though, understandably, they need to satisfy their core broadcast production clients first. Let's face it, if it wasn't for those specialist customers, this project wouldn't even exist.

Even once the motherboard is complete, there will still be work to be done on the video I/O cards for the broadcast media market. After that, Millipede intend to look into a number of other niche market ideas which people have come forward with. No doubt we'll hear more about these in the not-too-distant future.

Go faster stripes

The new breed of 600MHz StrongARM chips are something Millipede are keen to learn more about; firm information on whether the chip will support a 26-bit mode for backward compatibility is still unavailable.

If this mode is lacking, the chip will be unusable with the current versions of RISC OS except perhaps as an addition to the existing processor and we'll have to wait until RISCOS Ltd have made the necessary changes to make the operating system run in a fully 32-bit mode.

Let's not get too excited (but one can't help but speculate) an *Imago* board equipped with a 600MHz chip could well put RISC OS hardware back in competition with the rest of the market.

Given that a x4 performance increase is already being felt in some areas, with the existing chip, as a result of *Imago's* wider memory bus and the 600MHz StrongARM is likely to be 4-6 times faster than the 233MHz part (due to internal architecture changes as well as the faster clock speed) things could really start to fly.

As you can see from *Imago's* specification, it certainly isn't aimed at the education sector in the way that the *Mico* and *R7500 Lite* primarily are. However, RiscStation's PCI developments would appear to appeal: *"The other people, particularly RiscStation, do have some interesting developments on the way so clearly they're going to be able to offer similar sounding solutions in due course. We've leap-frogged that by going straight in with a StrongARM board and high-res graphics."*

There is no doubt that the Imago project will produce some very exciting results fairly soon. In the meantime though, there are still numerous issues to get sorted out, including production method. We'll keep you posted. END

Company details

Company:	Millipede Electronic Graphics
Address:	Cambridge House, Hargrave, Nr Bury St Edmunds, Suffolk. IP29 5HP
Tel:	01284 850594
Fax:	01284 850351
E-mail:	info@millipede.co.uk
Web:	http://www.millipede.co.uk/

PCA windfalls

Walter Briggs explores a world of interactivity

I remember the days of portable radios and TVs, now it's computers, phones and toilets so what is the great attraction with portability? Being able to work wherever you are, to hear, to watch and to do – this is freedom.

And things get ever smaller, miniaturisation has been the vogue for many years and continues to set the fashion.

But for many tools it has not caught on perhaps because the gadgets have become just too small. While the portable television is found in most homes, from the bedroom to the caravan; the tiny miniature TV is rarely seen any more. And where the portable phone is still shrinking, our fingers and thumbs remain the same size.

No doubt the tiny computer will be a novelty for while, but having to use a ball point pen to input data might be intriguing for children, but it's not likely to catch on with most adults.

And so we come back to portability – this is still the desire of most people, to be able to work anywhere, anytime and it's a great boon. The idea not only applies to computers but also to software applications within the computer world. This is where PCA (Plug-in Compliant Application) comes in – as a series of portable, plug-in graphic tools created by Rob Davison of *Compo* fame.

This little bundle of tools allows multiple programs to access common objects which reside in shared memory. This is not OLE nor is this article about acronyms, but useful tools. OLE means Object Linking and Embedding which allows you to alter an image – after, for example, it has been loaded into a word processor – by running and reloading it into the bit-map or vector program which originally created it and then saving back into the document it came from. This means you have to run both programs simultaneously and each has its own copy of the graphic.

For example, if you were working on an article which had an image on one of the pages, you could double-click the image and invoke the art program which created it. For example, *Photodesk* might be loaded with a copy of the image to work on. Once you have edited the image, you close the program and the edited image is updated in your word processor.

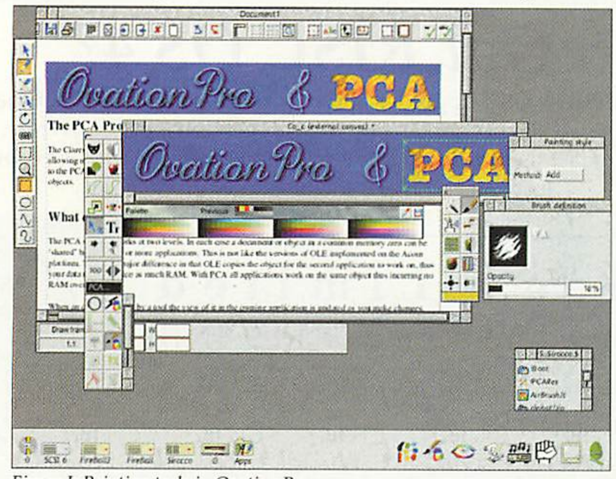


Figure I: Painting tools in Ovation Pro

This is very memory intensive, since you now have two programs running and are using two copies of the image. PCA is different: Only a single image is used, the one in the parent application, in this case the one in your word processor and a PCA tool will do its thing to it. And with the prices of RAM climbing once more, memory becomes a consideration.

The main application needs to be PCA compatible so it knows how to talk to PCA tools: *Ovation Pro* does and so does *Compo* – which, though able to manipulate images, does not provide any painting tools – so enter PCA (Figure I). In this screenshot the *Ovation Pro* document is in the background, and the 3D heading, which is actually a *Compo* canvas consisting of three pieces of text, is being edited in the PCA window. Remember this is not a second image, only a second view of this same image. Any work done on the image, such as moving or painting any of the text, is immediately updated within *Ovation Pro* – wonderful.

If the parent program's PCA code is written thoroughly enough it's possible to work within a single window, rather than opening a second one. Now some of you may recognise that in this screenshot an image is being edited in a *Compo* window – more of this later.

Tools on tap

Perhaps now would be a good time to explain some of the tremendous tools available in PCA which are already quite comprehensive, including: brushes; airbrushes; textures; cut and paste; and alter the tonal values of an image – called a colour munge (sounds messy) but can alter brightness, contrast and intensity.

There's even a History option – a little crude at the moment, but it is the progressive history that many programs need. Also at this time I should point out that the code

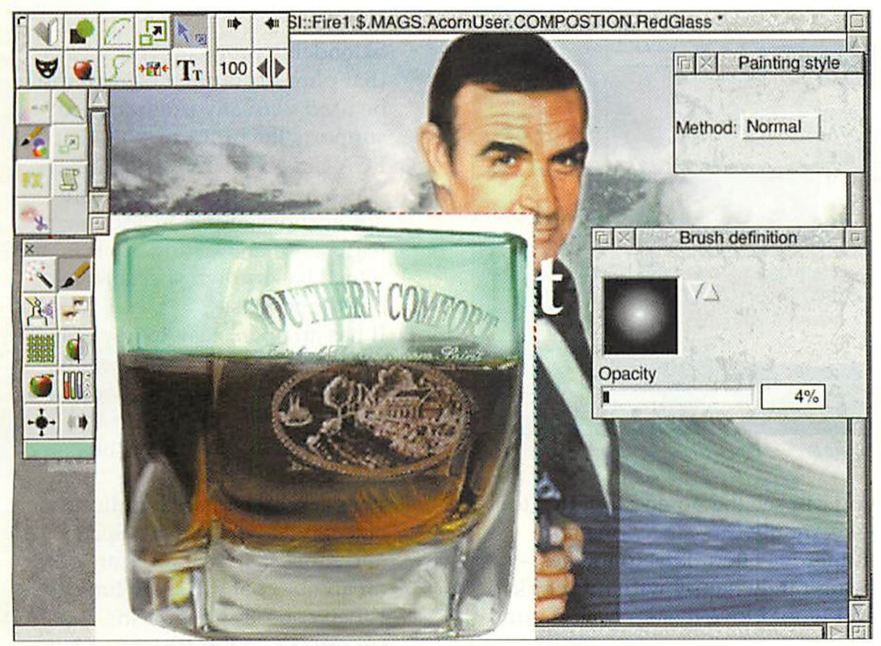


Figure II: Editing a graphic in situ

needed for the parent application to be able to use PCA has to be in the program first. PCA is not a stand-alone graphics program that can work on its own images – it needs input from a parent program such as *Ovation Pro* or *Compo*.

So far as I know *Ovation Pro* is the only DTP program outside the Clares stable that has the ability to implement these tools. I know David Pilling is a bit if a whiz – but I'm sure, with the right encouragement other software producers could be induced to include the necessary code. It's up to you, the user, to decide whether this is something you want to use (the cost of these tools is negligible) and insist they are made available.

Stirred martini

So why would anyone want any of these plug-in tools? How often would anyone want to alter an image after it has reached the stage of being implanted into a word processor? I know I do.

I am forever altering images, even at the last minute – and while I could use OLE – it would be simpler, and take less memory to just click on a toolbar and bring up an airbrush or similar tool and make the needed alterations in the word processor window.

Suppose Mr Bond's drink clashed with another image on my page – calling for the need for a change of glassware (Figure II). Since I am working in *Composition*, which implements PCA tools, I select the glass, which obligingly leaps forward to be tinted – and this happens within the *Compo* window, there's no need for a second window since *Compo* has the code to handle *in situ* editing.

What happens is that the selected image comes to the front (though it retains its position within the *Compo* canvas) and is immediately available for work. I simply choose the airbrush and re-spray the glass (a sickly shade of green – only to demonstrate this option). This was a *Compo* image and had not been merged with the background, but since *Compo* doesn't have an airbrush facility – all I have to do is click on the glass and select the airbrush tool and start work. And Mr. Bond's drink becomes an unsuitable shade of green.

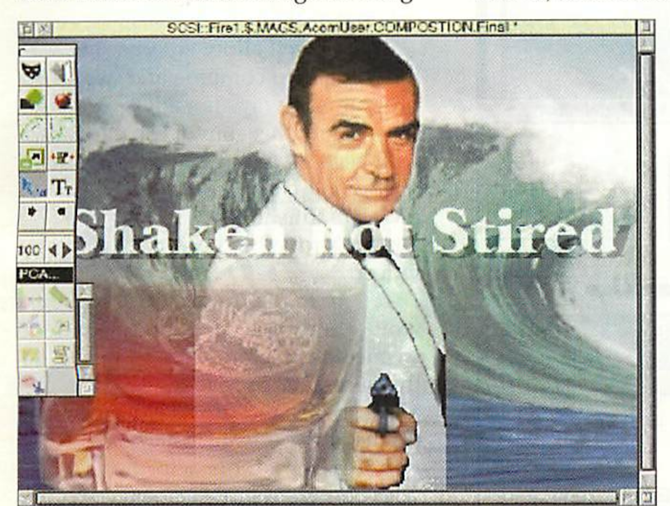


Figure III: Altering graphics becomes very easy

In this screenshot you can see the PCA toolbar, though it's not highlighted and none of the tools are selected, but the airbrush is sitting there just waiting to be implemented.

Dremmell software

Perhaps the idea of these PCA add-on tools can be compared to an electric drill that uses various bits and tools; something most of us would be familiar with, though many attached to DIY spouses (spice?) may plead ignorance.

The PCA applets work in the same way. Each tool can be written by someone, and attached to the PCA toolbox – to become available for use with the appropriate program. So staying with the analogy of a Dremmell drill with numerous attachments – the drill itself can be equated to the parent PCA-compliant application, and the drill bits likened to the small tool applets. The "chuck" is the PCA protocol that let's them talk to each other.

Another advantage of using PCA, rather than OLE to alter an image in a word processor, is that the original program may not contain the tools you need to edit your image. As is the case with some of the images in this article – they were produced with *Compo* which doesn't have any painting tools. And if you can't find a program with the rights tools remember: PCA allows any applets to be created, to be able to alter an image in any way – so create your own.

Take for example Figure III – having inserted Mr. Bond into the page, I decided that he would look better in a white jacket. Let's suppose I was working in *Ovation Pro*, this image is a Composition file so all I would need to do would be to click on the secret agent, conjure up *Compo*, call up its PCA tools and simply airbrush in a white tuxedo. Great or what? Any tools are available to use, once the program is aware that they exist.

Figure IV shows yet another tool. This is how 'Dolly' was really cloned – within *Ovation Pro*. Actually the sheep was surgically cut out from another location and placed into the image residing in *Ovation Pro*. In this screenshot the second animal is floating above the rest of the flock.

But PCA is even more adaptable than it appears at first – the tools don't just have to be little proglets,

in Figure I you can see that *Compo* is attached to *Ovation Pro* as a set of tools – the whole program is just another tool to PCA. This is where the drill analogy breaks down – it's like adding an entire vacuum cleaner.

Tasty applets

As I mentioned earlier, PCA already has quite an array of tools – comparable with any decent 24-bit art program. But if you look at Figure V you will see a vital addition that every RISC OS art program lacks – the aforementioned Sprite History. Now at this juncture I have to say that Rob Davison has explained that this option is in its early stages and is not implemented as he would like. Though with a little encouragement I'm sure he could be persuaded to improve this great option.

This is a progressive history – so you can go back in steps to any stage of your work. This means that at any time during your current session you can go back and alter your image or begin again from any particular point in your work.

In Figure V you can see three progressive history stages in the window at the bottom of the image. Now at the moment these various stages are saved as individual sprites which takes up large amounts of memory. So, though user-friendly it is very memory hungry. But I'm sure

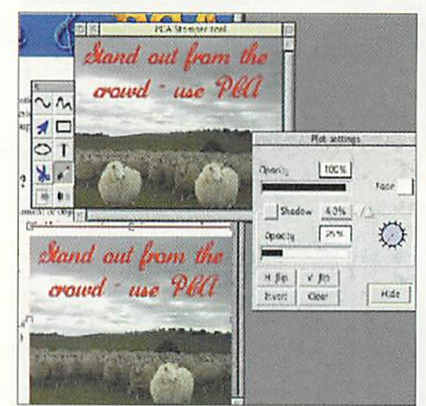


Figure IV: Cloning Dolly in Ovation Pro

you can see the potential in this tool – I certainly can, since I make numerous alterations to images – being rarely happy with my work and would love to step back in time.

PCA – tekkie bits

The main problem with altering images at the last moment using OLE is the drain on memory.

But another inherent danger, is that of a crash – a problem with either one of the programs can cause you to lose precious work – as I have found to my cost. So PCA has a number of advantages in being able to work and edit images within the confines of the parent program:

- PCA is different to other plug-in systems used by other programs such as *Artworks*, as PCA is designed to be an open, extendable protocol. This means that plug-ins written using it can be used with any program that supports the protocol;
- PCA can be used in several ways – as a means of building entire applications or just to add new features to an existing application which has its own specialist in-built functions;
- It has an open, easy to implement protocol. You can implement it using virtually any language;
- Tools can stay on the disc and are loaded automatically on demand;
- PCA can potentially handle any object type (Draw, Text, Sprite...) and more than one tool can work on an object at the same time;
- When comparing with the (Acorn/CC) OLE system – Only one copy of the object is needed – saving memory;
- No Save-Load-Edit-Save-Load cycle;
- You see your changes in the original document immediately;
- You can have more than one tool for a given object type and choose the one you want for the job (OLE Control+Double-Click just runs the file);

PCA gets away from monolithic applications and has the potential to help make user interfaces simpler and programs smaller. This is because many of the extra bits that "might prove to be useful" can be left out of the core program.

If the user wants a particular function – they can use a PCA tool to do the job, that tool will then work with all PCA-compliant applications and it does its thing in the same way in all of them. Of course it means that programs can be extended and enhanced by people other than the original author.

It may well allow enterprising individuals to combine and use programs in ways not envisaged by the author. The 'sum of the parts' can well become the creator of more than one 'whole' Not all of these PCA tools are finished, but many have already proved to be very useful indeed.

It's up to you to decide if you would find these tools useful, and so encourage programmers to add the necessary code to main applications and provide the tools to do the job you want. Thanks to Rob Davison for his help, along with abundant patience and of course innovation.

END

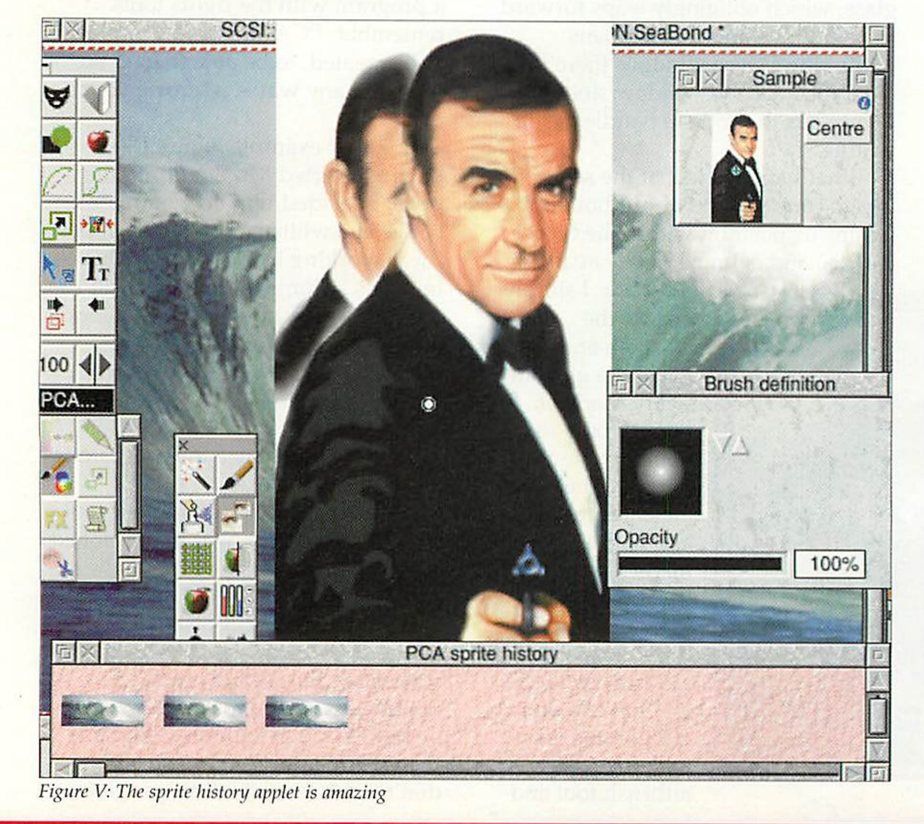
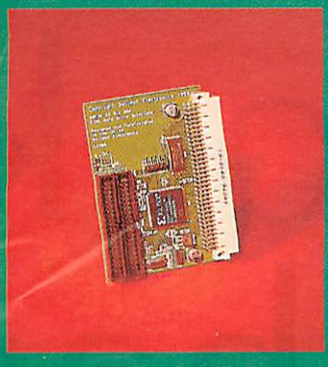


Figure V: The sprite history applet is amazing

MicroDigital peripherals for Acorn computers

Awesome 32 bit IDE controller card



The 32 bit Awesome EIDE controller card for the Risc PC is simply the quickest interface around. The card is a spin off from our Mico computer development program from which more products will come.
Awesome uses full 32 bit DMA access and depending on the drive fitted transfer speeds better than 7MB/sec can be achieved, and that's real world speeds, over four times as fast as any built-in interface. Supports four IDE devices, hard discs up to 8 partitions, r/w, read only and no access status plus password protection. Includes CDFS and ATAPI CD drivers.
*Whilst Awesome works with most drives it will not work with all manufacturers units.

Model	order code	price
All Risc PC	MDAWE32	£ 119.00 Warranty : 5 years return to base

Rage 16 bit IDE controller card

The 16 bit Rage IDE controller card for Acorn A310, A400, A5000, A540, A7000 and Risc PC is easy to fit, simply plug in. Rage uses DMA on the Risc PC with overall performance twice as fast as the built-in interface. Supports four IDE devices, hard disc up to 8 partitions, r/w, read only and no access status and password protection. Includes CDFS and ATAPI CD drivers. Connectors available for internal and external deives.

Models	order code	price
See above	ACARCIN	£ 52.00 Warranty : 5 years return to base

Swift 8 bit IDE controller cards

The 8 bit Swift IDE controller card for Acorn A3010, and A3000, is easy to fit, self configuring, simply plug in. Swift controllers are available with either external IDE connector or User Port.. Supports four IDE devices, hard disc up to 8 partitions, r/w, read only and no access status and password protection. Includes CDFS and ATAPI CD drivers.

Models	order code	price
See above	ACA3INEC	£ 62.00 Warranty : 5 years return to base
See above	ACA3INUP	£ 62.00 Warranty : 5 years return to base

DataStar IDE hard disc drives



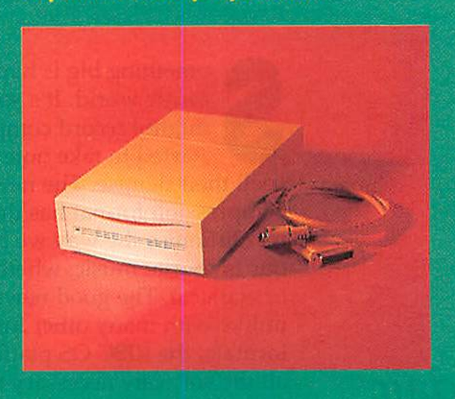
All units below prices include: drive unit only.
All drives are fully tested to meet the requirements of our Zero Defect Quality Assurance Programme, and they are covered by our twelve month no quibble guarantee.

Size/model	Speed	Access	order code	price
6.4GB Seagate	5400 rpm	9.5ms	MDDSSGIDE64	£ 92.00
8.4GB Seagate	5400 rpm	9.0ms	MDDSSGIDE84	£ 113.00
10.2GB Seagate	5400 rpm	9.5ms	MDDSSGIDE102	£ 115.00
13.6GB Seagate	5400 rpm	9.5ms	MDDSSGIDE132	£ 120.00
17.2GB Seagate	5400 rpm	9.0ms	MDDSSGIDE172	£ 134.00
20.0GB IBM	5400 rpm	9.0ms	MDDSIBIDE20	£ 151.00
25.0GB IBM	5400 rpm	9.0ms	MDDSIBIDE25	£ 189.00
37.0GB IBM	5400 rpm	9.0ms	MDDSIBIDE37	£ 282.00
13.6GB IBM	7200 rpm	9.0ms	MDDSIBIDE136	£ 163.00
22.0GB IBM	7200 rpm	9.0ms	MDDSIBIDE22	£ 194.00
27.0GB IBM	7200 rpm	9.0ms	MDDSIBIDE27	£ 250.00
34.0GB IBM	7200 rpm	9.0ms	MDDSIBIDE34	£ 350.00

DataStar IDE hard disc drive with Awesome controller card

Size/model	Speed	Access	order code	price
6.4GB Seagate + Awe	5400	9.5ms	MDDSSGIDE64A	£ 201.00
8.4GB Seagate + Awe	5400	9.0ms	MDDSSGIDE84A	£ 222.00
10.2GB Seagate + Awe	5400	9.5ms	MDDSSGIDE102A	£ 224.00
13.2GB Seagate + Awe	5400	9.5ms	MDDSSGIDE132A	£ 229.00
17.2GB Seagate + Awe	5400	9.0ms	MDDSSGIDE172A	£ 243.00
20.0GB IBM + Awesome	5400	9.0ms	MDDSIBIDE20A	£ 260.00
25.0GB IBM + Awesome	5400	9.0ms	MDDSIBIDE25A	£ 298.00
37.0GB IBM + Awesome	5400	9.0ms	MDDSIBIDE37A	£ 391.00
13.6GB IBM + Awesome	7200	9.0ms	MDDSIBIDE136A	£ 272.00
22.0GB IBM + Awesome	7200	9.0ms	MDDSIBIDE22A	£ 303.00
27.0GB IBM + Awesome	7200	9.0ms	MDDSIBIDE27A	£ 359.00
34.0GB IBM + Awesome	7200	9.0ms	MDDSIBIDE34A	£ 459.00

Optim backup systems



With hard disc drive capacities getting larger and larger data security is increasingly becoming a real headache, the MicroDigital Optim system offers a cost effective, fast solution.
The system is based on fixed hard disc technology, they can be attached to any Risc based computer with a bi-directional printer port.
Optim is moveable between machines and locations, this flexibility makes Optim an ideal backup system.

Models : Acorn A3010, A3020, A4000, Risc PC's. Mico all systems.

Size	order code	price
6GB	MDDSOPT6	£ 252.00
15GB	MDDSOPT15	£ 299.00
30GB	MDDSOPT30	£ 515.00

We also supply Mice, Memory, Keyboards, 2.5 inch hard disc drives with and without controller card, floppy disc drives, and monitors for most Acorn models. Please telephone for prices.

IDE CD ROM drives



All CD ROM drives are fully tested to meet the requirements of our Zero Defect Quality Assurance Programme, and they are covered by our twelve month no quibble guarantee.

Price includes drive unit and data cable

Model	order code	price
A7000		
A7000+		
All Risc PC models	ACIDECDIN40	£ 47.00

Price includes drive unit, Rage 16 bit controller card, data cable, software includes CDPlayer, Photoview, ChangeFsi, utilities disc and manual.

Model	order code	price
All Risc PC models	ACIDECDIN40R	£ 94.00

Price includes drive unit, Awesome 32 bit controller card, data cable, software includes CDPlayer, Photoview, ChangeFsi, utilities disc and manual.

Model	order code	price
All Risc PC models	ACIDECDIN40A	£ 156.00

With the exception of External drive only the units below include: Housing, drive unit, datacable, and controller card. software includes CDPlayer, Photoview, ChangeFsi, utilities disc and manual.
The units are tested to meet the requirements of our Zero Defect Quality Assurance Programme, and they are covered by our twelve month no quibble guarantee.

External drive only

Model	order code	price
All models	ACIDECDEX40	£ 107.00
Backplane adaptor	EXADP01	£ 14.10

External drive with 8 bit Swift controller card.

Model	order code	price
A3000, A3010		
A3020, A4000	ACIDECDEX40S	£ 159.00

External drive with 16 bit Rage controller card.

Model	order code	price
A300, A400		
A540, All Risc PC models	ACIDECDEX40R	£ 154.00
Backplane adaptor	EXADP01	£ 14.10

External drive unit with Awesome 32 bit controller card.

Model	order code	price
All Risc PC models	ACIDECDEX40A	£ 216.00
Backplane adaptor	EXADP01	£ 14.10

MicroDigital Limited, 37 Titus Street, Saltaire, Shipley West Yorkshire, BD18 4LU
Telephone number 01274 618774 FAX number 01274 619482 email address sales@microdigital.co.uk
web site www.microdigital.co.uk Prices include VAT and mainland uk delivery. We welcome payment by Cheque (allow 5 days to clear) and Credit cards. Education Orders Welcomed.

Rock har

Alasdair Bailey listens to a new sound

Something big is happening in the music world. It's so big that even the mighty record companies have started to take note for fear it will spell their demise. The new MP3 audio compression format has the potential to revolutionise the way we buy and listen to our favourite music; whether it be rock, pop or classical. The good news for us is that, unlike with many other Internet file formats, the RISC OS platform already has all the software necessary to surf the new wave.

MPEG 1 layer 3 compressed audio streams, or MP3s as they are more commonly known, have been with us for a while but this method of compressing digital music has only recently hit the headlines due to its use on the Internet. The MP3 standard comes from the same family as JPEG, the popular still-image compression format and MPEG, the video compression format now used for DVD Video.

All three methods are known as lossy-compression standards since when an image, video or sound file is compressed, some of the finer detail is lost in order to reduce the filesize. In the case of audio data, the frequencies of sound which aren't audible by the human ear are removed along with other trickery which enables file size reductions in the order of about 12:1.

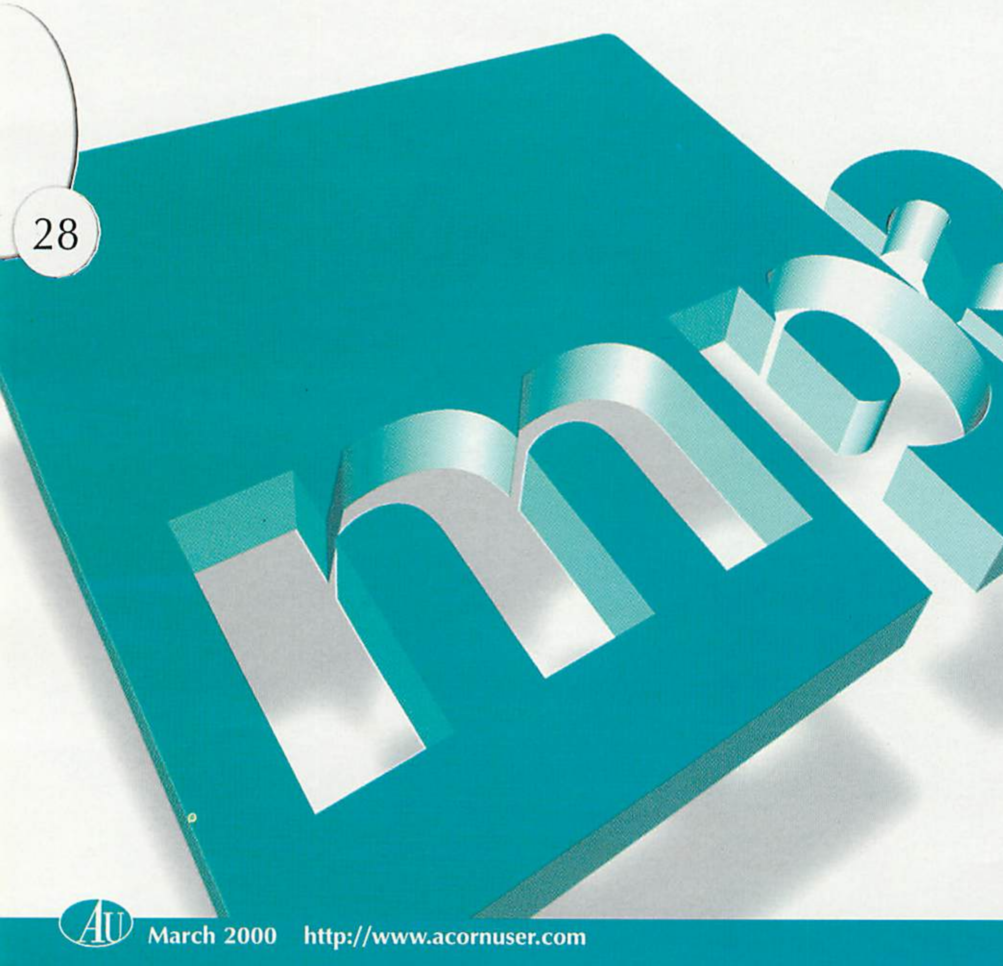
Typically, a four-minute track will compress down to around 4Mb if the stream remains in stereo and the CD-quality sampling rate of 44,100kHz is maintained. Given the original will have occupied around 50Mb on an audio CD, it's easy to see why this format is so popular among Internet users. A quick bit of maths demonstrates that a single track of filesize in the region of 4Mb may be downloaded from the Internet via a 56.6kbps modem in less than 15 minutes. Naturally we don't condone piracy, but it is the rate at which pirate music sites have appeared on the WWW which is making heads turn among the big record labels.

Currently, it is possible to find almost any track from any CD recording ever made somewhere on the Internet. Although music piracy using the MP3 format may seem like a victimless crime ("the music companies are rich and, anyway, they rip people off, don't they?" is the usual justification) it is still illegal nonetheless. However, legal action taken so far has been concentrated on the distributors rather than the end users of copyrighted recordings.

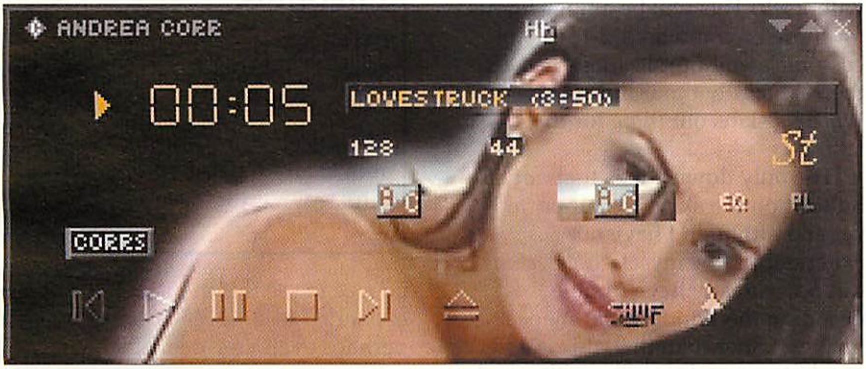
That's the boring legal bit out of the way. The fact that MP3 is used for music piracy doesn't mean that all MP3 *is* piracy. It isn't.

Many new bands are using the format to promote their wares before they're signed to a record label, see http://www.splendid-isolation.co.uk for one good example of this. Many other genuinely free music sites may be found on the Internet, follow the links from http://www.winamp.com/ for a good collection of different styles.

The MP3 format may also be utilised to take music from tape, vinyl or CD onto your RISC OS machine for archiving. Thus, you can make playlists of all your favourite songs from across a range of recording media. Making one copy of a recording (or computer program) that you own for personal backup purposes is acceptable under British law. However it is worth noting that in order to digitise music from



and a d place



Andrea Corr - the best thing from Ireland since Amp itself

tape or LP, you'll need a sound sampling card or one of the new RISC OS machines with a line-in socket.

Make your own MP3s

The process of encoding MP3 files under RISC OS is a little slow at present due to limitations imposed by the lack of proper floating point capabilities on most machines. However, it can still be done relatively easily with a StrongARM processor.

First off, you'll need an application to take the music tracks from CD and store them on your hard drive. Many such applications are available and they all do the job well. If you don't already have one, take a look at the *Acorn User* Web site's cover disc section for a copy of *!AudioFS2*.

Once the audio stream is on the computer, *cmpa* and the optional front-end from Justin Fletcher form the only viable compression route for RISC OS (see URL box for locations).

Encoding a single track will take the best part of three hours. However if you have access to a PC, it is well worth using that for the compression side then transferring back to RISC OS for playback. This is simply because at the end of the day, a Pentium III 450 chip is easily capable of encoding a track in about the same amount of time as it would take to play the track in full.

The MP3 file format includes space to store information relating to the track title, artist name and also the genre of music stored in a file. This information can then be displayed by the player application so that long-filenames needn't be an issue. Software to edit these ID3 tags can be found on Justin Fletcher's website at the address in the URL box.

Before I continue, I must stress that as with any computer audio, you'll need some decent speakers to make the most of it. The internal Risc PC one is not a decent speaker.

A nice pair will set you back no more than £30 and are well worth it. Alternatively, get hold of a phono lead and jack converter and plug into your Hi-Fi's auxiliary input if it has one.

Once you've obtained your MP3 files from whatever source, you'll want to be able to play them back from the comfort of your RISC OS desktop. There are four good ways to do this and since all are free to try, we'll just take a brief look at each.

There are two good MP3 playback modules at present for RISC OS, both of which are still being actively developed. *AMPlayer* from Thomas Olsson is the better of the two based on sound quality and features, whereas *AudioMPEG* from Peter *(Quake)* Teichmann uses a little less processor time at the expense of a slightly inferior sound quality. However, both will sound good through computer speakers or a Hi-Fi setup so you have nothing to lose.

Another word of caution before I continue concerns processor power. MP3 playback is a fairly complex business so you'll need a *StrongARM* processor in order to gain any worthwhile results. That said, one of the first players for RISC OS, *dmpa*, may be used to spool MP3 files to disc in uncompressed format on slower machines but this kind of defeats the object of the whole exercise.

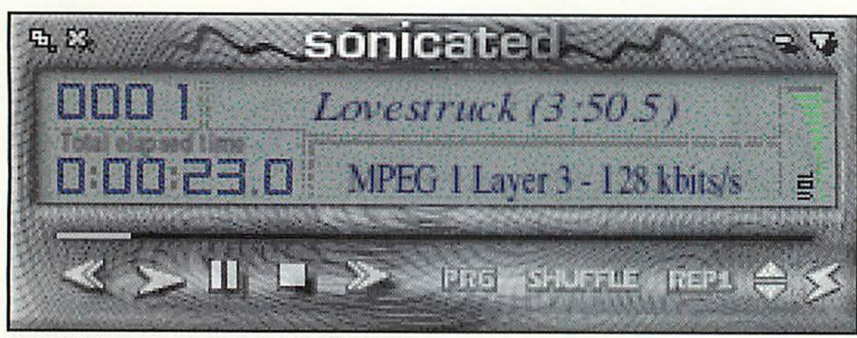
DigitalCD

This neat player from André Timmermans is the only one so far to use Peter Teichmann's *AudioMPEG* player module for playback. As well as playing MP3 files, all the usual tracker formats are supported along with a second player window which pops up to allow CDs to playback independently of MP3s and the like. The player also includes a five channel equaliser along with support for plug-in visualisation applications and "skins". A skin is set of graphics which can be used to customise the appearance of a player application's windows.

DigitalCD includes support for the new range of multimedia keyboards which include dedicated keys to perform a number of operations such

Sound Quality	Bandwidth /kHz	Mode	Bitrate /kbps	Reduction Ratio
Telephone Conversation	2.6	mono	8	96:1
AM Radio	7.5	mono	32	24:1
FM Radio	11	stereo	56-64	26-24:1
near-CD	15	stereo	96	16:1
CD	>15	stereo	112-128	14-12:1

Typical compression ratios possible with MPEG 1 layer 3 encoding



DigitalCD demonstrating one of its nicer skins

as play, pause, stop and search. The application can also be set up to communicate with the RISC OS version of *CDDB* to automatically download CD track names from a special server over the Internet.

RiscAMP

RiscAMP is a shareware offering from Andy Boura of ARMage Software. This is an MP3-only player though it does include good playlist support along with plug-in and skin support in a similar vein to DigitalCD. My preferred playback module, AMPlayer, is included with RiscAMP though no graphical equaliser is present.

This player has potential but unfortunately doesn't boast all the features of the others. It is also a little less stable and occasionally causes problems with the Filer. The shareware registration fee of £10 is perhaps a little steep for a player which does less than its free competition.

Amp

So far as features go, David O'Shea's *Amp* very similar to *DigitalCD*. Although it lacks a graphical equaliser at present, it is still under development and includes seamless support for the CDDB protocol. Furthermore, the superior *AMPlayer* module from Thomas Olsson is employed here. The main bonus of using *Amp* over the rest is that it can take skins designed for the Windows MP3 player, *WinAmp*, and automatically convert them for use with itself. This will be a huge bonus for those of you who like to customise your applications because there's literally thousands of *WinAmp* skins out there for the taking.

The only downside is that not all buttons on the skins are supported yet and although I have not experienced this myself, *ChangeFSI* can occasionally have trouble decoding the Windows bit-map images. Other than that, this is a very good player and is well worth a look.

Control AMPlayer

Unlike the other player front-ends considered here so far, *Control AMPlayer* from Justin Fletcher does not aim to imitate either a real-life hi-fi or the Tracker/Digital Symphony players of yester-year. Once the application is running, all you need to do is to tell it where to start playing and it will continue to play through that directory, in order, until told to stop.

However, writing an application *that* simple would be silly. Keypad keys are employed to control playback with all the usual controls, including volume, being included. You wouldn't know that *Control AMPlayer* was running until one of its control keys is activated, at which point, a little icon appears in the top right corner of the screen to let the user know it's still awake. Support is included for the new range of multimedia keyboards but it would be nice to see this mini-player expanded to support CDs and perhaps even user-definable playlists.



RiscAMP's nice VU bars and playlist window



MP3 Resources on the Web

Players

DigitalCD http://www.geocities.com/SiliconValley/Horizon/4471/

RiscAMP http://www.armage.demon.co.uk/andrew/

Amp http://indigo.ie/~koshea/acorn/amp.html

CDDB http://www.acorn.com/~jberank/acorncd/

Encoders

CMPA and *AudioFS2* http://www.acornuser.com and follow links to cover disc

MP3Encode (frontend for the above) and ID3 tag editor http://www.thevillage.ndirect.co.uk/justin/

And finally...

Overall, I have to say that *Control AMPlayer* is my preferred solution for MP3 playback. It plays back my music without cluttering the desktop with excess windows and iconbar icons. To take it to the extreme, I have even set up small Obey files to mount my PC's hard disc via *LanMan98*, load the player then start a particular album playing. Many a PC user has gawped at the ease at which I can start an album playing through my Hi-Fi with a single click on a *WimpBar* menu!

Before I go, the rising number of portable MP3 players on the market deserve a mention. These players look and feel very much like a miniature Walkman-type device but contain a compact flash memory card (often of the type used in digital cameras) or built-in flash memory chips.

The high-end players are now capable of holding up to 64Mb of compressed music and will set you back around £225. Okay, so you'll need a PC or Mac to transfer the files onto the player but I wouldn't be surprised if someone has already put together RISC OS drivers for their own personal use (do let us know if you have). END

Contacting me

Alastair Bailey:
alastair@acornuser.com

A go

Max Palmer looks into texturing his objects

Last month we spent quite a bit of time discussing a couple of user-intensive, modelling techniques for overcoming some of *TopModel*'s more frustrating limitations. In particular, we looked at two techniques for cutting holes in simple, planar surfaces and more complex, curved objects, as well as examining a useful method for creating bevelled objects by hand.

While the techniques discussed are quite involved, they present solutions to problems that might be encountered when tackling even simple modelling tasks. As such they should prove to be invaluable aids in the long term.

This month we slow the pace of life a little and take a more relaxed look at one of the most important aspects of modelling, namely, texture mapping.

TopModel is the only 3D modelling application for RISC OS, as far as I am aware, which supports both material properties as well as texture mapping. For those of you that are unfamiliar with the term, 'texture mapping' refers to the technique by which an image or set of images (sprites) are applied to the surface of a model to enhance its appearance.

It is a technique that is extensively employed by 3D games to lend a greater sense of realism to an environment while, at the same time, reducing the polygon count. We can therefore use texture mapping to both improve the appearance of our scenes, as well as reduce the time it takes to complete a design by using textures as a substitute for geometric information. For example, a picture of a window can be used in place of a model of the window. A rare, win-win situation for the 3D modeller, assuming you have some suitable textures to hand that is. So where can we get some? While any sprite can

Figure I: Breeding procedural textures in Texture Garden

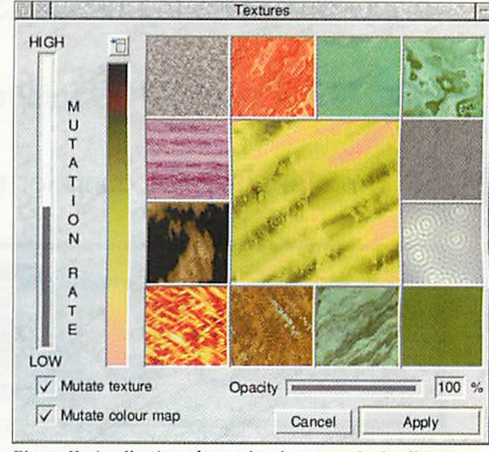


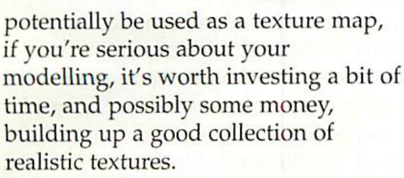
Figure II: A collection of procedural textures in Studio24Pro











potentially be used as a texture map, if you're serious about your modelling, it's worth investing a bit of time, and possibly some money, building up a good collection of realistic textures.

By realistic I am referring to the types of material that everyday objects are made from. For example, just having a few images of wood, brick and stressed metal can greatly enhance your rendered models.

Procedural textures

Broadly speaking, there are two main types of textures, procedural and photographic. Procedural textures are computer-generated and are created using special algorithms. Unlike some other modelling packages, *TopModel* does not have built-in procedural texture support. However, a number of RISC OS packages can generate procedural textures, including *TextureGarden*, *Studio24Pro* and *Photodesk*.

Common to all the above applications is an ability to select a texture and mutate it to create new varieties (Figure I). In some cases it is possible to adjust the rate of mutation, opt to mutate the colour map, and in the case of *TextureGarden*, create animated textures and modify parameters by altering a script file. Once you are satisfied with your results you can export the texture as a sprite which can then be used within *TopModel*. However if you wish to 'breed' from the texture, you should save its definition.

The advantage of the procedural approach is that new textures can be created quickly and easily, at almost any resolution you desire. Furthermore, some packages can produce seamless textures, saving you a lot of post-processing work in a bitmap editing package (more about this later). However, there are a number of drawbacks too. First, it takes time to produce a varied set of textures (Figure II).



Figure III: Photographing textures yields problems with reflection and perspective through to uneven illumination

Second, while procedural textures are great for creating marble, science fiction and psychedelic effects there are a lot of materials that simply cannot be produced with any great sense of realism using procedural textures. In such cases, there is no substitute for an image of the real surface or object.

Photographic textures

There are basically two methods available for creating a photographic texture library: you can gather the textures yourself or you can obtain a ready-made collection. The former obviously necessitates more effort on your part, however, it enables you to tailor the collection to fit your needs and also gives it a unique slant.

The great thing about textures is that they are all around you. All you need is a camera and scanner, or even better, a reasonable digital camera. Fortunately, texture maps don't need to be particularly high

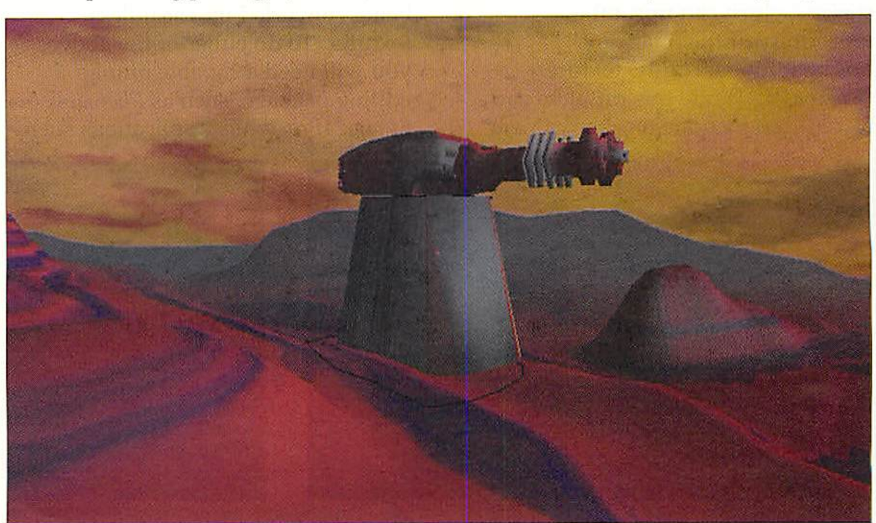


Figure IV: Mild pixellation caused by using a low resolution texture (visible in the foreground to the right).



Figure V: Seams present in an unprocessed photographic texture

resolution to achieve good results. You can get away with good quality maps starting at about 500x500 pixels which (pretty much) any digital camera should be able to achieve, although I would aim for a decent mega-pixel camera with good linearity across the image if you decide to follow this route.

Problem areas

When taking texture shots you should make sure that the subject is evenly illuminated, is face on and has good contrast and colour balance across the field of view. You should also try to avoid photographing objects which are in partial shadow, for example a brick wall that is illuminated from an acute angle. While such subjects might appear appealing at the time, the resulting map is likely to look out of place when applied to an object where the lighting differs from that used in the original shot.

Another source of potential problems when taking photographs of textures is reflection from the surface which can upset the uniformity of the image by brightening part of the texture (Figure III). While this problem can be reduced by adjusting the camera angle, using filters and altering the position and intensity of light sources (for example try disabling the camera's flash) it can still prove to be a real obstacle. This is one area where having a digital camera is a great bonus, since you can refine the environment in situ until you are happy with the result.

Unfortunately, getting the photographs into your computer does not mean the task of building your library is complete, since an image is unlikely to be in a suitable form for immediate use. Large scale, specialist feature maps such as windows and doors will need editing and cropping to remove unwanted details or to enable an alpha channel to be applied, while surface textures such as pebbles, grass and wood will benefit from being converted into seamless textures. To do either of the above, you will need a capable bitmap editing package, such as *Photodesk* or *Studio24Pro*, while applications such as *Compo* are particularly useful for creating alpha channel information for masking out part of an image.

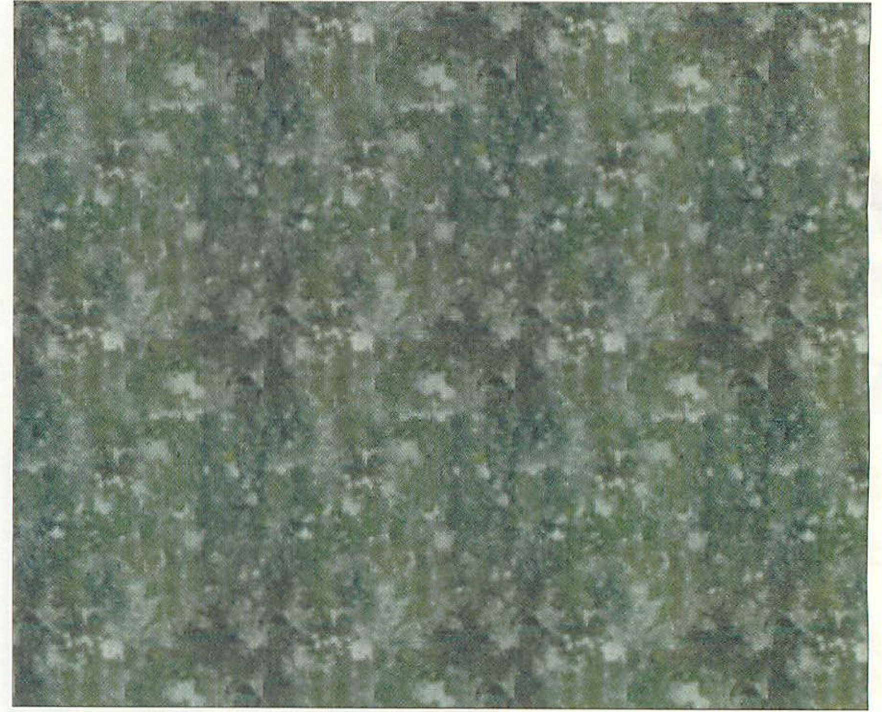


Figure VII: A seamless texture may still possess repeating features



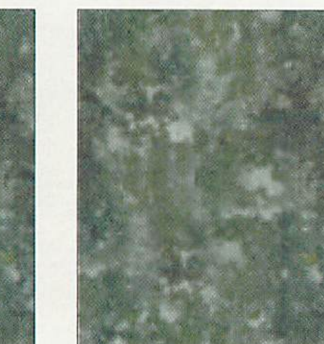


Figure VI: SprShift can be used to shift the seams into the centre of the sprite, where they can be removed by cloning other areas of the image

Seamless textures

Earlier in the text, I mentioned that seamless textures were great, since they save a lot of post-processing work. Why is this? Well, often large areas of a scene will be composed of a single type of material, for example a landscape. If we were to cover the mesh for the landscape using a single 500x500 pixel texture, it is likely that the foreground section of the object would exhibit severe pixellation due to the texture being stretched to cover the entire object and the scale of the net in the foreground.

A mild example of foreground pixellation appears towards the right hand side of the image shown in Figure IV. If this effect becomes severe it can spoil the illusion we are trying to achieve, so another approach is needed. While we might opt to use a much higher resolution image to reduce the degree of pixellation, such an approach is inefficient and would consume valuable resources, limiting us in other respects.

A better approach would be to cover the object with a repeating copy of the pattern. This technique is known as tiling. However, we can't just tile any old texture and expect everything to look great, since most untreated textures will exhibit an obvious discontinuity where the copies of the texture meet (Figure V).

What we really want is a texture

which, when tiled, doesn't produce a visible seam, hence the term 'seamless texture'. How might this be done?

To eliminate the seams we first need to be able to see them. In my opinion, the best method of doing this is using an image which shows the intersecting regions of the four quadrants. Fortunately, Mike Dickens has already written a freeware utility which handles this task magnificently.

He even kindly submitted it to *Acorn User* some years ago, so it should be on one of the past cover CD-ROMs. The utility, called *SprShift*, takes a sprite with even dimensions, but which is not necessarily square, and shifts it to show the intersection of the four

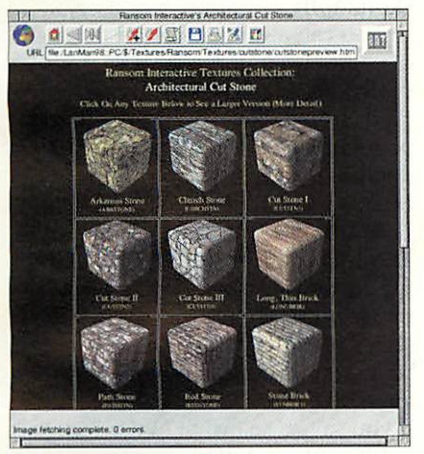


Figure VIII: Ransom Interactive's web site contains example images of all their excellent stressed textures and is just one of a number of sources of commercial texture libraries

quadrants. Once you have your shifted sprite, you need to load it into a bitmap editing package which has tools for cloning part of the image using variable opacity (*Photodesk* and *Studio24Pro* qualify). All that remains is to use the clone tool to edit the joins so that they are no longer visible (Figure VI). This might involve repeatedly copying another portion of the image so that it covers part of the seam or blending the two edges together to blur the join, making it look less distinct.

What is certainly clear is that no one technique is optimal for all types of texture. By and large, the best technique to use will depend on the scale of the features in the texture. However, with a bit of practice you should soon be able to produce some good results – just don't alter the edges of the shifted image, or you'll be back to square one.

Once you have finished your alterations, run the image back through *SprShift* to reposition the quadrants. You can check the new map for any visible joins by setting the texture to be the pinboard's backdrop using the tiled option. It is important to note that although textures may be described as being seamless, this does not mean that they have no obvious repeating features, rather that they have no readily visible seams when tiled (Figure VII).

Visit a library

As you can see, creating your own texture library can be rewarding, however it is also quite a bit of work. Fortunately textures are such a vital resource for the 3D modeller that a number of sources are available over the Internet. Often, such sources contain a fair amount of poor quality textures, or a high proportion of similar procedural textures, which are of limited use. However, occasionally you will come across a few real gems which are a nice addition to any collection. Simply type 'textures' into any Internet search engine and follow the links.

If you do come across a good source of textures you should always make sure you check the licensing conditions before you download them, since some sites place restrictions on their use. However, if you're prepared to spend a bit of money you can have complete peace of mind and buy a commercial texture collection.

The great thing about commercial texture collections is that they are of high quality, usually seamless, free to use in commercial work and often come complete with bump maps. They are also grouped according to themes.

Obviously, you pay for these privileges but often the results are worth it. Expect to pay anything from a few tens of pounds to a few hundred for a really good collection.

Sincronia have produced two graphics resource CDs which include some textures as well as fonts and objects. Other resources worth checking out include UK-based *Picture Garden's Base CD* or if you fancy venturing across the pond, Marlin Studios have produced some good looking themed collections covering topics such as signs, interiors and stonework. Finally, if you're after so-called 'stressed' textures (such as crumbling brick walls, dirty plaster and so on) look no further than Ransom Interactive who produce an excellent series of textures collections, covering themes such as wood, European tile and stressed metal. This is one collection I find really useful (Figure VIII).

Commercial texture libraries

Marlin Studios
http://www.marlinstudios.com/

Ransom Interactive
http://www.forgotten.com/textures/

Picture Garden
http://www.picture-garden.com/homeframe.htm

Auto F/X
http://www.autofx.com/

Mapping modes

So now you've got all the textures you could ever want, how can you use them? Load up a scene and make sure texture mapping is enabled on the rendering menu. Select an object and then use Shift+F5 to bring up the attributes window. Finally, select the texture tab to show the texture information and press the 'Read Attributes' button to update the information for the current selection.

Just below the texture tab (Figure IX), is a window which shows a thumbnail of the currently selected texture in the numbered list. You can move through the list of textures that are currently loaded using the arrows to the right of the preview box. To add textures to this list, either drag an image into the thumbnail window from a directory

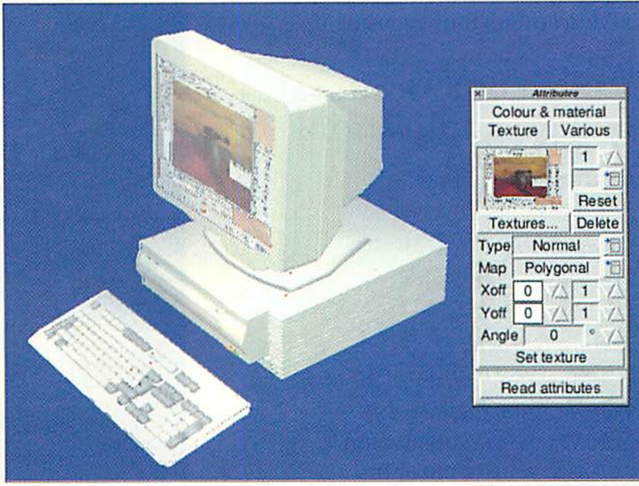


Figure IX: The texture tab of the attributes window

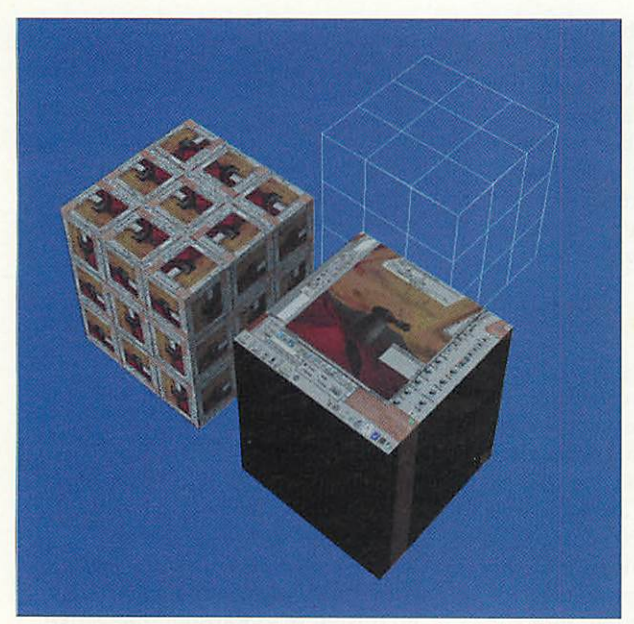


Figure X: Polygonal and planar texture mapping

window, or press the textures button to go directly to the textures contained within *TopModel*'s TopRes directory.

Delete will delete a texture from the list, but can cause problems with previously saved scenes, so beware. Note, all textures will be copied inside the TopRes directory so that *TopModel* can keep track of them, so it's a good idea to set up your collection below this directory to save unnecessary duplication of resources and maintain an ordered structure.

To the right of the preview box is a menu button. Clicking on this will bring up a full-scale image of the texture from which a colour for the alpha (transparency) channel can be selected using the mouse. The currently selected colour is shown to the left of the menu button. This colour can be cleared using the reset button.

If you decide that you no longer want to apply a texture to an object, simply apply texture number zero. *TopModel* offers four types of mapping mode. Polygonal mode applies a copy or copies of the texture to each selected polygon, while planar mode applies a planar projection of the texture to the selection (Figure X).

The effect is a bit like that you would obtain if you placed a white object in the field of view of slide projector. While everything looks OK from the front, if you were to examine the side of the object, you would find that the image has been stretched across the surface, producing a streaky effect. This is because the map only varies across a two-dimensional plane (in X and Y), you should therefore be careful to select the right view before applying this type of map.

The cylindrical and spherical mapping modes are used to apply textures to spherical and cylindrical objects (Figure XI). In these cases, the part of the texture map that is applied to the surface depends not on the X and Y location of the point in the plane, but the angle between the centre of the object and the given point, in either one direction plus the height (cylindrical mapping) or two directions (azimuth and elevation – spherical mapping). Use cylindrical mapping for pillars and spherical mapping for planets.

Other, more comprehensive modelling packages allow you to create complex UV maps which define the section of an image which is applied to a given polygon. Furthermore, packages exist which provide facilities to paint directly on the surface of an object or on the UV map itself.

Unfortunately, no such RISC OS application exists. However, Sincronia and Spacetech could, in theory, link the Gemini engine directly with Photodesk's tools! It would probably require a new mapping mode and a bit of fiddling, but would fill a real niche on my shelf.

Below the options for the map type box are options adjusting the position of the texture by specifying an offset. This enables the image to be shifted with respect to the origin (Xoff/Yoff).

You can also increase the number of copies used in the X and Y directions enabling the texture to be tiled/scaled. Finally, the texture can be rotated through 90,180 and 270 degrees to obtain the desired orientation.

To apply the texture, use the Set Texture button or drag the image to the current selection. Dragging an image onto an empty portion of the scene will apply the texture to the background, although rather annoyingly, this image is not scaled if you save a snapshot of the scene at a different resolution.

As you will discover, texturing a scene takes both time and patience, however the results can be stunning. It is a subject we shall return to in the next article, where we shall spend some more time exploring the attributes menu. Until then, keep modelling. END

RISC OS Procedural texture applications

Photodesk
http://www.spacetech.co.uk/

Studio24Pro
http://www.pineaple.demon.co.uk/

Texture Garden
http://www.mandala.co.uk/

Textures and Textures Pro
http://www.arsvcs.demon.co.uk/r-comp/index.html

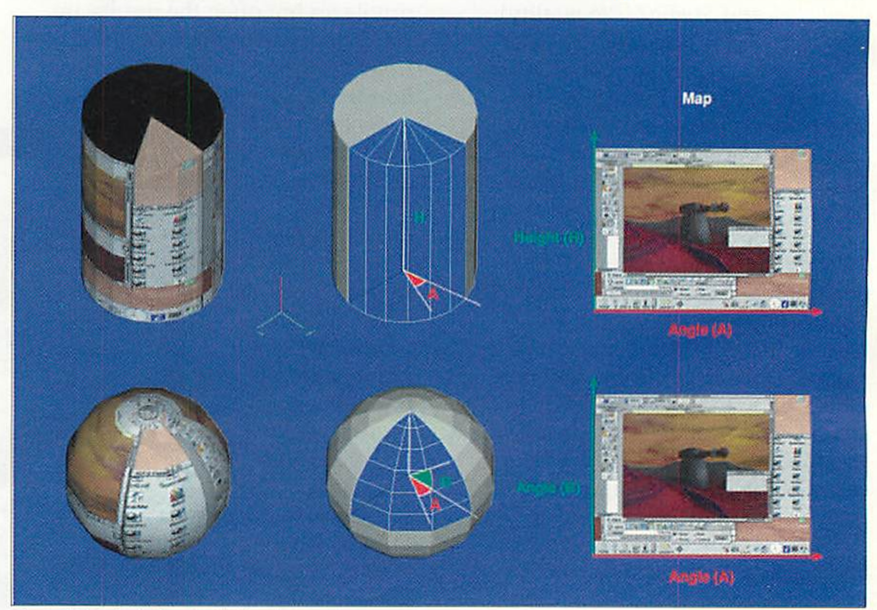


Figure XI: Spherical and cylindrical mapping

Showroom open Mon-Sat 10-18.00 hrs (All prices INCLUDE VAT) Carriage not included

RISC OS Computer Systems

- Please ring regarding availability (Carriage £15)

Computer Model with	15" Monitor	17" Monitor	No Monitor
Acorn Sprinter NC 16MB, 10BaseT with Mse/Keybd	£485	£625	£350
A7000+ Classic 8Mb, 1Gb HD	£803	£663	£528
A7000+ Classic CD 8Mb, 1Gb HD, 24xCD	£721	£866	£586
A7000+ Odyssey CD 16Mb, 4Gb HD, 40xCD	£780	£920	£645
A7000+ Odyssey Secondary 16Mb, 4Gb HD, 40xCD	£839	£979	£704
A7000+ Odyssey Surf 24Mb, 1Gb HD, DVD, 56k, ANT	£956	£1096	£821
Riscstation NetWORX 8Mb, No HD, 10BaseT	£604	£744	£469
Riscstation R7500 Lite 16Mb, 4GbHD, 48CD, 10BaseT	£721	£866	£586
Risc PC SA233T 8Mb, 2Gb HD, RO3.70	£1015	£1155	£880
Risc PC SA233T 18Mb, 4Gb HD, 40xCD	£1167	£1307	£1032
Risc PC J233T 34Mb, 8Gb HD, DVDCD	£1227	£1367	£1092
Risc PC WebWizard 34Mb, 8Gb HD+DVD	£1426	£1566	£1291

- Web Wizard includes ANT Internet Suite, JAVA, External 56k modem,
- Easiwriter Professional with MS Word 6/7 compatibility, Resultz.

We only use quality monitors which are Samsung SM550b for 15" and Samsung SM-750p for 17".

D-Link ISDN Hub/Router £230c

Connect up to 6 computers to the Internet with just ONE single ISDN dial-up[1] internet account!

This amazingly easy to use unit is suitable for RISC OS, PC, Mac & Unix computers and compatible with BT ISDN/HomeHighway services. It provides;

- 128kbps Multilink PPP ISDN with compression & PAP/CHAP security.
- Connection to TWO ISDN sites simultaneously.
- A SIX port 10BaseT Hub for networking to each computer[2].
- TWO analogue telephone ports for standard telephones, faxes & modems.
- DHCP Server for automatically configuring computers for the network.
- Built-In Telnet server for configuration & diagnostics[1].
- Flash upgradeable for user-installable future firmware upgrades.

Ring now for further information.

[1] - ISDN line and ISP account not included. [2] - Each connected computer must be equipped with a 10BaseT network card. NOTE - PSU, Network cabling for ONE computer and ISDN Cabling is included with the unit.

Tektronix®

Colour Laser Printers (Carr £15)

Phaser 740L A4 1200dpi Mono £1320
- Colour upgradable. 16ppm, 16Mb RAM, 10BaseTEther,,
- Parallel, Postscript Level 3, PCL5, 136 Fonts. 1yr warr.

Phaser 740N A4 600 dpi Colour £1700
- 1200dpi Mono, 5ppm Colour/16ppm Mono, 32Mb RAM,
- 10BaseT, Parallel, Lev3PS, PCL5, 136 Fonts. 1yr OSM.

NEW Colour Solid Ink Printers

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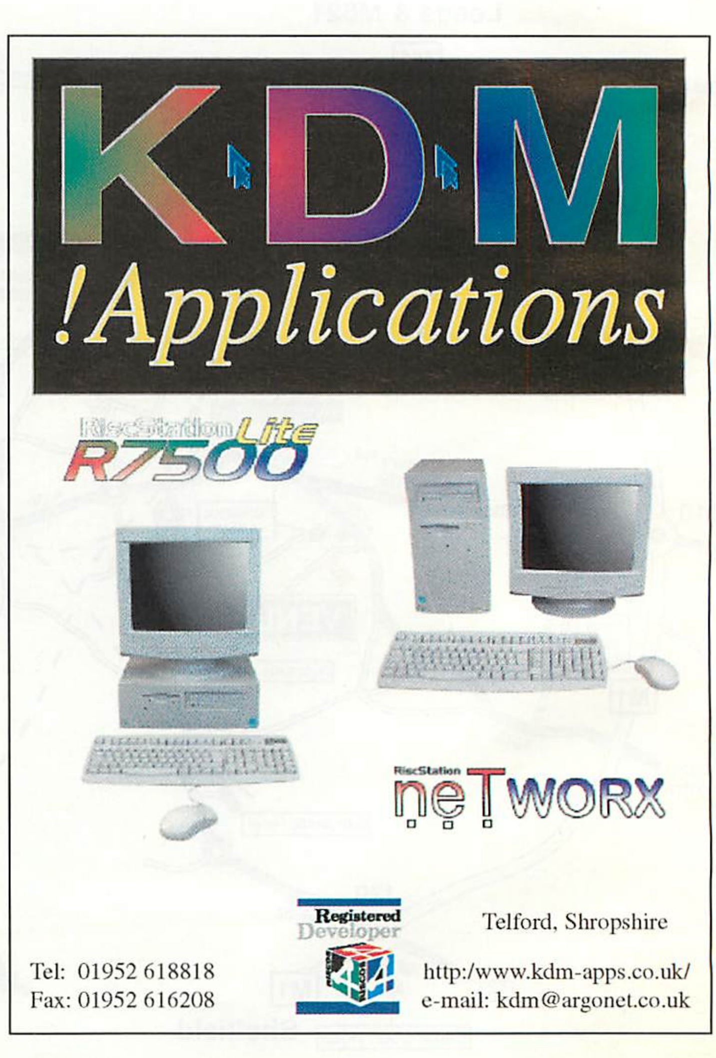
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Ten things you can do

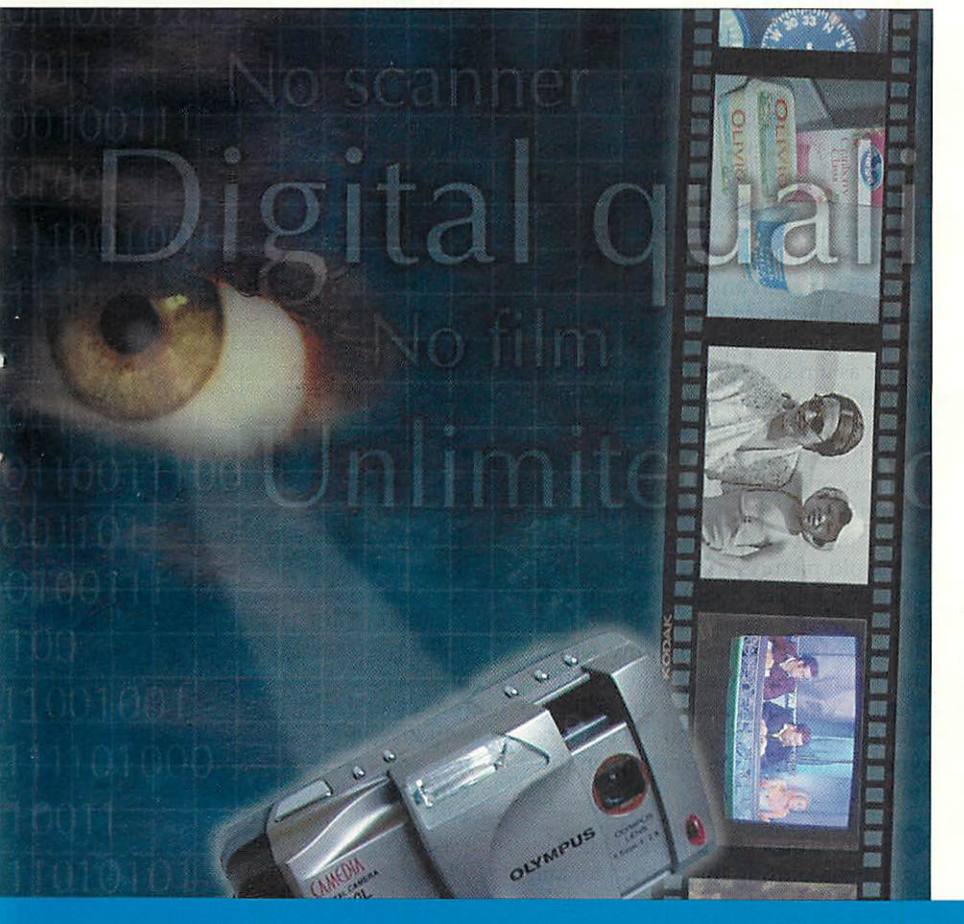
RISC OS artist Christopher Jarman shows what you can do with a digital camera

A digital camera is no different from any other, in that you can take the pictures that you want in any way you want. But when you don't have to pay for film and you can waste as many shots as you like on try-outs, a different feeling comes over the possessor of a digicam.

It takes quite a while to conquer that ingrained reluctance to waste film most of us carry around. Early this year I bought a Sony Mavica which takes JPEGs on a floppy disc. I acquired it to work with on a trip to New Zealand, and to visit relatives in Australia and Canada.

I produced over 800 images and stored them on the hard disc of a PC notebook. If I had used a standard 35mm camera there is no way I would have felt justified in taking so many pictures. This way I was also quite happy to erase hundreds of duff shots too.

Here are ten uses that I have found for my Sony. They are in no particular order. I am sure readers will think of many more, but as Steve Turnbull told me 'Keep it decent'.



1 Take, take, take and edit, edit, edit until you get it right. Incidentally it is also very good for attracting members of the opposite whatsit, because I found that every time I produced the gear in public, especially in Australia for some reason, ladies would crowd around to see the little image on the screen. My Aussie cousin, who recently divorced, was so impressed that he bought one the next day.

2 You can take screenshots from the TV, and of course, from your computer screen. You will usually get a band of interference across the TV picture, but less so from Channel 3. It can be a boon to have the digicam handy for the computer screen, as the other day when my wife had a program freeze I was able to photograph a screen full of text before it erased itself.

Unfortunately, the resolution on mine is not good enough for OCR but that will come in good time. Also, I was able to take a close-up of part of an aircraft panel in a Flight Simulator as an aide-memoir. Yes I



Scanning trannies to with a camera

know you can use screen grabbers but believe me the camera is quicker. You may also take some good screenshots at movies and slide shows – but only if you have permission.

❸ I had a strange rash on my lower back the other day which I could not see, however contorted a position I tried. My better half took a quick digiphoto and I was peering contentedly at my medical condition on the Risc PC screen within seconds. I almost printed it out as a Christmas card for my GP but was restrained in time.

❹ In my capacity as a graphic artist I need to look at all kinds of the latest design, packaging and so on. It is necessary to keep up with the times even though much modern style seems to be a re-hash of the 1930's at the moment. I had a commission for a logo the other day and my client said that he would like some lettering similar to a sample he had seen on a certain carton of milk.

A quick trip to Sainsbury's with an embarrassing two minutes in front of the dairy products, and the idea was on a JPEG. I did not use it of course, but the convenience was there.

I have photographed passing vans and several shop windows in Bruges, all in the course of research. I never had the nerve to waste film on that kind of thing with my conventional camera – I suppose that if you share a flat with greedy mates, you could photograph the contents of the fridge each time you go out.

❺ Keeping the digital camera in your car in case of a road accident is another useful idea – though it hasn't been necessary yet. But it came with me while on my aerobatics course in a light aircraft the other day! Trouble was that, at 3Gs and with both hands on the control column, you don't feel terribly like taking snaps as well! However, a lorry backed into my front wall a couple of months ago



Computer screenshots are handy for learning things

and I was out there turning the damage 'digital' within five minutes. My insurance claim was in the post with a printout by teatime, although unfortunately I just missed the bloke's licence number.

❻ The sheer speed of results with digital is astounding! Four or five years ago we could not have envisaged the sort of convenience it could provide. I have a small apple tree at home planted by my son who now runs a garden centre in New Zealand. It was looking a bit poorly a few weeks ago with drooping discoloured foliage. I took a digi-close-up of a couple of leaves and e-mailed an image to my son in South Island. Within half an hour he had diagnosed the problem and told us what to do. I think it involved watering or some such. But it was



Hours of happy fun snapping in a supermarket

useful, and we sent a picture of the new grandchild as well.

❼ What to give mother aged 84 for Christmas this year? Well WHSmith do a blank calendar in which you can paste your own photos. Mothers notoriously live in the past, so I looked out some really old Box Brownie negatives which had not seen the light of day since the 1930s. I had never seen any positives from them and neither I suspect, had my mother. They were mostly of my father as a reckless teenager with his motorbike, and my parents and me as a two year old on a Devon beach.

By blue-tacking them on a window and taking the camera to within 50mm of the negs I could select 'invert' and have a good look at the old pictures as positives. What a revelation! The quality was superb; at least by my standards. I reproduce the one of my mother and myself on the beach somewhere on the south coast in 1936, and maybe the editor will give a small prize to the reader who can identify the warship on the horizon?

❽ This brings me to the next use I have been putting the Mavica to, and


So, what is the name of the warship?

that is as a scanner. I have a medium range scanner and if there is a really high quality BMP needed for something, I use it. But most of the time one just needs to splat a low-res pic onto a website or keep the record of an illustration in a book or magazine. A few quick try-outs with the camera are all that is required, and it is much easier in my view than setting up the scanner.

Added to which I do not have a scanner that will work with 35mm slides. But the camera will take perfectly acceptable pictures of my old slides if I lay them on a home-made light box.

With the lens set at wide angle and the 35mm slide only half a centimetre away, I have now recorded dozens of my old 1950s slides and saved them to the Risc PC. At a pinch you can blue-tack them to the window like the negatives to snap them.

❾ The model of camera I am using has the facility to make an electronically produced sound like a shutter working. But it can be turned off, making it a very silent camera indeed. If you are wanting to take pictures of children in the family without making a fuss, it is very much easier with a silent camera, especially one where you do not have to put the gadget to your eye. If there is a telescopic option, better still.

❿ My last suggestion is about making panoramic pictures or even huge multiple frame mosaics. With the almost unlimited number of frames at your disposal taking pics and joining them together becomes economical at last.

To avoid distortion, it is best to use the telescopic end of the lens. Ten frames sideways and four frames up will give you a better picture than any wide angle lens. And at last you can show off your garden on your Web site with a 360 degree view pasted together using *Photodesk* or *Compo*. **END**



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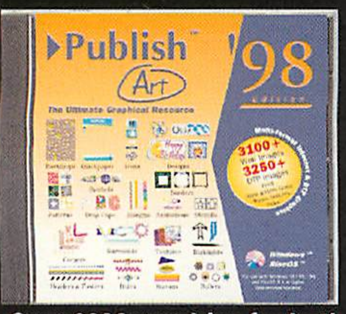
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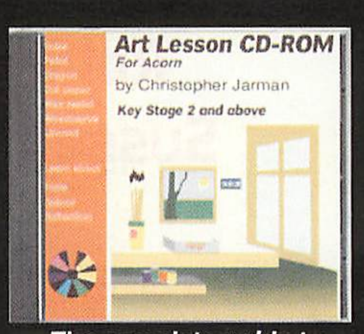
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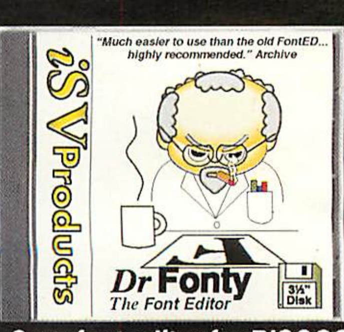
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Draw DIY DTP

Simon Anthony links Draw with its free cousins

Assuming you have got this far you are now probably quite adept at using *Draw*. This really is a very powerful application, it can even do DTP but it needs a bit of help from friends like *Paint* and *Edit*. Every reader who has *Draw* has *Paint* and *Edit* too so this article will assume the reader's text and sprite editing facilities are no better than those of *Edit* and *Paint* – but any other editor will do just as well or better.

At first, handling text with *Draw* and a text editor may look confusing but once you get the hang of it it's quite simple. Text in *Draw* is not a matter of clicking on the T icon and typing, that will work for headings and special effects, but for large amounts of text we will use a new feature: Text Areas.

First, type your text using your favourite wordprocessor, (or *Edit* if you don't have one), spellcheck it and then save it as raw text – which is all you can do with *Edit*.

Raw text is an ASCII text file (filetyped as *text*) by the way. When you do the typing make sure the text finally ends with a Return keypress, *Draw* needs this to tell where a paragraph and indeed an entire 'Text Area' ends.

No other formatting commands are either possible or required as *Draw* does that part. Style changes however can be made in the text later. Once the text is ready it needs to be 'imported' in to a waiting *Draw* window. To do this, save the text first, then drag the resulting icon in to an open *Draw* window. Or, if you are more adventurous, drag the text editor's Save As icon directly to *Draw* as the Figure shows.

The text will be displayed in an oddly, almost randomly, cropped

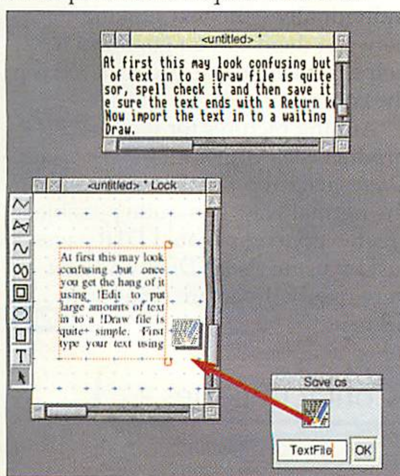


Figure I: Create a text area by dragging

Commands

\1	This must appear at the start of any text area file;
\AL	Left aligned;
\AR	Right aligned;
\AC	Centred;
\AD	Double or full – justified to both margins;
\B 255 255 255	Sets the background colour to 255 Red, 255 Green and 255 Blue – full white which is the default setting;
\C 0 0 0	Sets the text colour to Black in this case, zero Red, Green and Blue – the default – different numbers give different colours;
\D 2	Uses two columns, 1 is default;
\F 0	Trinity.Medium 12 [width] As above, but a width setting can be added;
\1	Uses the font style, as shown above;
\L 12	Sets the line spacing to 12 points. It should be set to at least the point size of the text for the current paragraph. The default setting is 10pt;
\M 10 5	Sets the left-margin to 10 and the right-margin to 5. Beware, if the columns are not wide enough no text will be visible. The default is 1pt at each side;
\P 20	Sets the paragraph spacing, the default is 10pt;
\U 0 1	Turns on an underline which can be placed at any height between -128 and + 127 units (of a size I don't understand) with respect to the bottom of the text. The second number sets the thickness, a setting of 0 turns it off as will \U by itself;
\V -5	Creates a subscript effect,
\V 5	will be superscript for a text point size of 10, try it and see.
\-	Inserts a soft hyphen which tells *Draw* that it may split a word over two lines here if needed. It will not show a hyphen if the word is not split;
\	plus a Return, forces a new line;
\\	Inserts a backslash \ which will be shown in the text;
\;	Anything following this up to the next Return will not be displayed. Use it as a way of adding notes to yourself;

Each of these commands must either be followed by a Return or a / character.

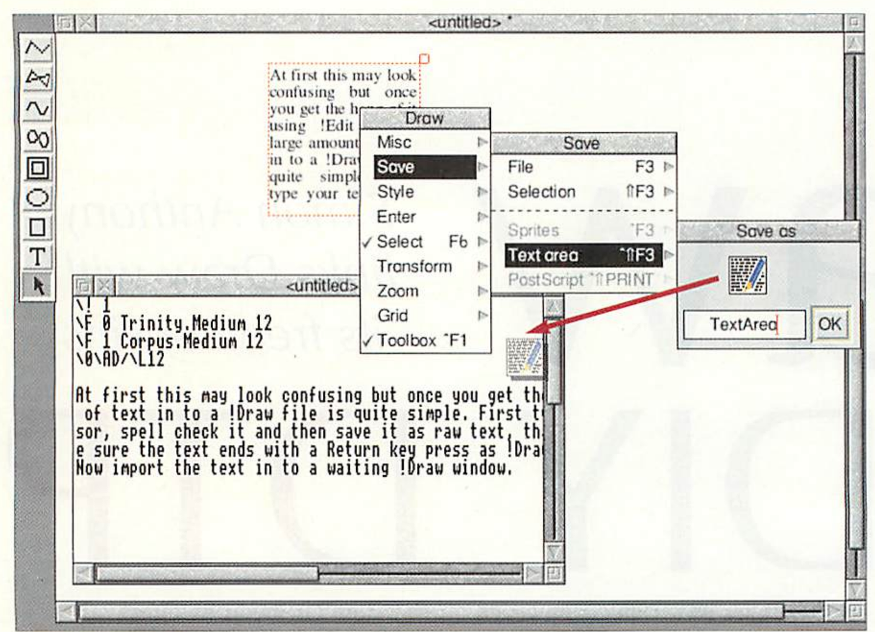


Figure II: Draw automatically adds the standard header

bounding box such as you would get with any object imported into or selected within *Draw*. However it will be rendered in the beautiful Trinity font at a point size of 12. But although it has all been loaded correctly you won't see all of it, the 'text area' has to be altered to show the text correctly.

The two "ears" which you get at the right of a bounding box around any selected object in *Draw* don't work in the same way for text areas, for example the twist option does nothing at all, in fact in later OS versions it will not even be there, the bottom right ear does what we need as it increases the amount of text which is visible. By dragging it around you see more of the text – not bigger letters.

Point sizes, by the way, are defined as 72nds of an inch. So, 12 point text is one sixth of an inch high (when viewed at a basic 1:1 magnification that is).

The complexities come in when you want to add Style changes to the text. For example, how do you make the text a different size, or even a different typeface (font in computer speak)?

Not with the normal Text options in Draw's menu – although they will work with text as typed directly in to *Draw*. The answer lies back in *Edit*. To add style changes the text has to be transferred back from *Draw* to *Edit*.

This is very easily done by selecting the text (by clicking on it to display the bounding box) and using the Save Text area option from the main *Draw* menu. Drag the *save as* icon on to your text editor (not a word processor unless you know what you are doing) and let go. You may want to go via the harddrive for safety, but you don't have to.

Nor do you have to start a new file when you drag the text back, just drop it in on top of the old text and it will be replaced. A tap of the F8 key will reverse the action if you need to. As the Figure shows the text has had a header added to it when it left *Draw*. It is this header that does all the style work for us.

The default header looks like this:

```
\ 1
\F 0 Trinity.Medium 12
\F 1 Corpus.Medium 12
\0\AD/\L12
```

The \ 1 bit tells *Draw* that this is a text area, it must always look like this. The \F 0 Trinity.Medium 12 part sets up a font variable called 0 to be Trinity.Medium at point size 12; you can have as many fonts, or more accurately styles as you like.

\F 1 Corpus.Medium 12 sets up Font or Style 1. You can either set all the styles up at the top of the file or just define them where they are needed.

The rest of the header is directly relevant to the paragraph of text which follows it and so every style change has to be proceeded by hidden code such as this:

\0 tells Draw to use the '0' setup from now on until the next \number is met. The \AD causes the text to be fully justified.

The / could be put after any one of the commands to separate them, but just pressing Return will do – giving each command a new line. Using a / lets you be a bit more neat though.

\L12 sets the Line spacing to be the same size as the displayed text, which is a good idea, you could make it more if you liked, thus giving more white space in the final display.

It is a good idea to have the RISC OS manual open while you experiment, apart from saying everything I have said in the last few months it can give more detail too. I have extracted the command set for you if your manual is too deeply buried by dust. As you can imagine, to make blocks of text where you want them is a matter of making text areas in the right place and dropping raw text into them.

If you want text to flow between the boxes, you will have to use multiple columns and move them around. But, if the text is in two or more columns you will not be able to change the size of the text area, until you double-click on one of the columns, then each can be handled individually – the text flowing between them as you go. I find it helps to turn on the grid lock to keep the columns neat.

Adding pictures for the final DTP product is as you would expect with *Draw*, just drop them in and resize in the normal way. It is quite possible to create very complicated DTP pages just by using *Paint*, *Draw* and *Edit* – very handy if you are on a budget. END

Hints

\1	Must be the first line;
\D3	Would make three columns of text;
\F 2 Jotter 20	Would define \2 to be a font style of Jotter at 20 point.
\L20	Would also be needed to correctly set the line spacing for the new font style.
\2	Would use the new Jotter font.

The last thing in a text file must be a Return or it won't work at all.

Contacting me

Simon Anthony:
draw@acornuser.com





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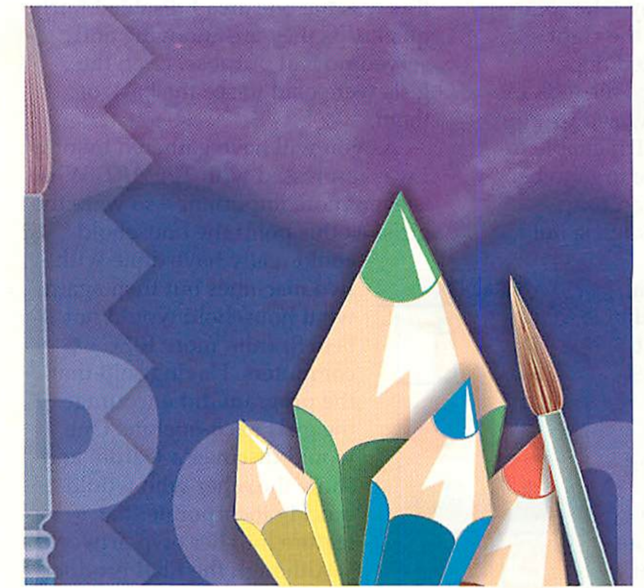
Mike Tomkinson at home with educational software

The first thing to say is that there is nothing new about *TinyART* the program. Brian Kerslake of Topologika was being perfectly honest with me when I requested a review copy. What is new and why the program now warrants a Plus as part of the title is that the software has been re-bundled to include some extra clip-art and a complementary program called *Tiny Puzzle* that produces on-screen jigsaw puzzles but as that is a separate program it is beyond the scope of this review.

TinyART, as the name suggests is a primary art package. As such you might think it would be difficult to review objectively as I am clearly not a part of the intended end user base for this program. Fortunately my two youngest daughters at 5 and 6 years old fall into the age bracket of intended users and were more than happy to provide feedback. Take a bow Jessica and Natasha. To be fair the two girls had been using the demo version of the program from the *Acorn User* Collector CD number 3 for a couple of years. This means that they had been able to produce art on screen since the ages of 3 and 4. The fact that they could produce something at this age speaks volumes for the ease of use of the program – even in its demo form.

However, there are a number of very useful features which were understandably not available on the demo version. Among them is the ability to customise the program for a particular age range. Thus if you look at Figure I you can see the wide range of choice you have and the fact that different tools and features of the program can be introduced gradually to a child learning to use the package.

Unless you were dealing with a very young child most of the features can be configured as "in use" from the start, however in the Special Needs area it may be helpful to switch them off. You might wish to disable the ability to get out of the program and get lost elsewhere in the system but RISC OS is generally so intuitive and bombproof that even this precaution could be safely ignored. Try doing it on a PC running Windows and you would be asking for trouble.



The tools at the disposal of the young artist are those you would expect: a crayon; a spray can; a number of simple shapes – filled or outline; a flood fill; some rubber stamps and a colour picker. A special tool allows them to produce mirror images in two planes as they draw.

The resizing of the crayon and spray can are as simple as can be. One particularly useful feature is the ability to undo using a big rubber. This is, of course, unique to art packages on computers and avoids one of the greatest frustrations of more conventional paper and paint/crayons.

It is interesting to watch the children drawing normally and then using a computer package. They will try to draw the same things in the same way but the computer art package does not encourage any creativity until its special features come into play. The fact that *TinyART* has just enough features to take the child that one stage further by being creative is sufficient justification for the use of computers and this particular program in itself. Jessica had just returned from spending the Millennium at Centre Parcs where she had seen in the new Millennium to a spectacular fireworks display.

I showed her how the flood fill worked: simply pick a colour and press the flood fill tool. She had experimented previously and knew how the spray can effect worked. She produced a flood fill black background, filled the night sky with exploding fireworks in different colours and sizes and wrote 2000 at the bottom. Just like she had seen a few weeks earlier from the lakeside beach at Centre Parcs. She would not have attempted anything so ambitious using paint and paper so the computer had complemented her artistic experience. She had produced

something which she could not have produced without the computer and *TinyART*.

As you might expect she was thrilled. She had produced something herself and been creative in doing so. The fact that, as a by-product, her sensory-motor skills had developed and been enhanced was immaterial to her but a joy for any parent or teacher to see. The use of a mouse may be natural to no one but it is certainly a skill best learned while young. The importance of a good mouse mat cannot be overstated here. The 3M Precise Mousing Surface is ideal for young children owing to its low profile and non-slip surface. While on the subject of ergonomics the child needs to be at the right height. Most adult chairs are too low and desks too high.

As you will have seen text can be entered as appropriate via a simple text entry tool. This may take some experimentation to get the right size text as it cannot be edited once placed on the drawing. This took me some getting to as I am used to packages like *Draw* which enable re-sizing. I had to fight the urge to be critical at this stage. I had to remember that the package is not aimed at me. The conclusion has to be that this is a good thing as the child has to think about the size of text or shapes or crayon size before putting it on the screen. The Undo feature allows a degree of experimentation before actually committing to an actual size or placement.

The Shapes available: circles, rectangles and triangles can either be filled or outline. Again I was expecting to be able to rotate them once they were on the screen. Again no, you can rotate them, in 15 degree increments but only before you place them. Once again the Undo allows experimentation.

TinyART can also load clip-art. Here the program can function as an electronic colouring book. If an outline clip is loaded a child can colour it in using the flood fill or crayon tool. This may lead to discussion of the appropriate use of colour and further develop hand-eye coordination skills in the very young. The girls were not great users of this feature probably because they had used a similar program from another software house when they were younger. The program comes with plenty of clip-art and extra clips can be added.

An adult looking at the program and could be forgiven for thinking it unsophisticated. That is simply because we are not seeing it through the eyes of a child. To them it is as full of bells and whistles as any adult package. And on the subject of bells and whistles the program does have sound effects and this was the one area I disabled fairly quickly as they are annoying and served no real purpose. Even the girls were glad to see the back of them.

As you will have gathered by now I was impressed with *TinyART*. What is even more important – so were the girls. At this point the household could really have done with two machines but then again what household would not benefit from more RISC OS computers. Having said that the program did encourage the girls to co-operate. One would discover a feature and show the other who would quickly incorporate that feature into her own artwork.

Figure I: Plenty of tools

Although the final product is screen based most children will not feel happy with their work until it is committed to paper. *TinyART* supports this process and work can be saved to disc and/or printed. Obviously a colour printer greatly adds to the sense of achievement but cheap inkjet printers are the norm today. I still use a Canon but the Epson range are excellent – providing there is an Acorn driver for the particular printer.

With this program on your computer and children in the house be prepared for the expense of providing a supply of colour inkjet cartridges. These are not cheap but that is the price you pay for encouraging your children's creativity and so it is probably a small price to pay. Topologika have taken the decision to produce their software for Windows and, in some cases, for the Mac. That means that *TinyART* is also available for the PC. This may be an advantage for schools as most now seem to have a mixed environment of computers. Sensibly Topologika can supply the second copy at half price so if you buy the RISC OS version the PC version is half price. On the subject of sense: Site licences are only twice the price of the single user version.

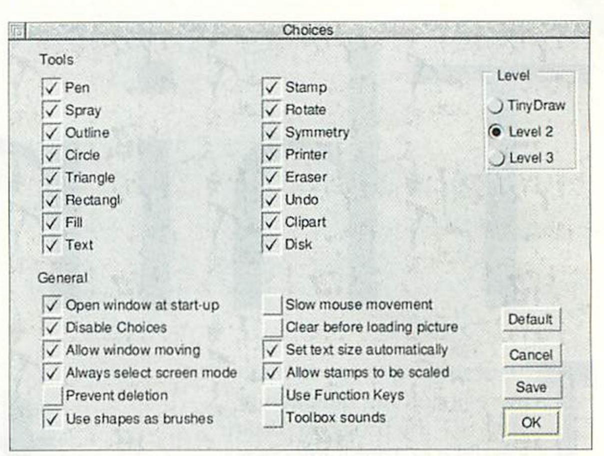


Figure II: More options than you can shake a stick at

Bottom line

This program represents excellent value. It is a mature program in that it has no rough edges and works perfectly. Topologika say, via their Web site, that the RISC OS version will be developed no further. That is a good thing as it indicates that the program is fully developed and stable.

To benefit fully from the experience of using the program an adult who knows it should be present to help and encourage the child. The program itself serves as an excellent introduction to the use of a mouse or tracker ball. If you have children or an Acorn in the corner of the primary classroom you could rest assured that it would be money well spent to buy this program. END

Product details

Product:	TinyART
Price:	Single User £30+VAT, 5-user pack £45+VAT, Site Licence Pack £60+VAT
Supplier:	Topologika Software, 1 South Harbour, Harbour Village, Penryn, Cornwall TR10 8LR
Tel:	01326 377771
Fax:	01326 376755
E-mail:	sales@topologika.com
Web:	www.topologika.com

Future pla

On Saturday 22nd January, RISCOS Ltd. held a successful one day event for registered developers at the Grimstock Country House Hotel near Birmingham. Attendance was good with representatives present from most major developers as well as many semi-commercial operations. Both future developments as well as existing caveats were discussed at length and the mood was generally very upbeat throughout the day.

Talks were given by RISC OS Ltd.'s two main programmers, Justin Fletcher and Matthew Bullock with the main topic for discussion being the preparations for converting the operating system and software packages to run in 32-bit mode on next-generation ARM processors. Supplies of the existing processors which have a 26-bit mode for backward compatibility are only expected to last for another year or two. Unfortunately, the current version of RISC OS itself is not 32-bit so it is to be almost entirely re-coded for use with the new processors.

Given that most of the operating system is written in assembler, this in itself is a major task but most, if not all, existing software will not work under the new 32-bit mode. Programs written in a high-level language such as C can easily be re-compiled but those that are written in assembler will need a complete re-write. Unless emulation of the 26-bit mode is supported or some other solution is found to support 26-bit applications on 32-bit-only hardware, little of the current back catalogue of RISC OS programs will be immediately usable on future 32-bit hardware. More recent applications which are still being actively maintained (such as *Ovation Pro* and *TechWriter*) will no doubt be upgraded but older packages such as *Impression* and many games for which source code may be lost will fail under 32-bit mode operation.

This news will have clear advantages for some developers. Those who are the first to market, say, a 32-bit compatible spreadsheet will reap the financial benefit as users buy new hardware and find their old software doesn't work. Some may argue that this is unfair on end users but for new users it is a necessary evil in order to allow RISC OS to harness the full power of future chip developments such as the new faster StrongARM chips due out in the next 12-18 months.

This switch-over isn't going to happen overnight. Support for 32-bit applications is set to be included for existing StrongARM chips prior to the final version for use with 32-bit only chips to create a transition period for coders to prepare for the new hardware.

What's happening?

The big names in hardware development were also present; Roy Heslop of RiscStation, David Atkins from MicroDigital and Richard Jozefowski representing Millipede (producers of the Imago) all put in an appearance.

Other familiar faces included Dave Holden, Paul Johnson (he of Charity CD fame) and members of the Argonet team. New developments were demonstrated by members of the team using RISC OS 4.10. This development version doesn't yet include any radical new features so is unlikely to see an official release. However, the official release is now up to 4.02 thanks to some "misfeatures" which have now been remedied. Versions between 4.02 and 4.10 are to be assigned to individual hardware products with 4.03 already shipping with the RiscStation.

With regard to the future of the operating system, a number of interesting areas were discussed. One notable development is native support for the emerging PNG graphics format (see February 2000 issue) which will hopefully be included with the next release version.

Rumours that the RISC OS 3.6 Programmer Reference Manuals (PRMs) have now been completely converted to HTML format for inclusion on a future CD-ROM product were confirmed. The CD will also include BASIC and Assembler guides and will be released at a price which will make them accessible even to enthusiast programmers.

The talk ended with a stern warning that E+ formatted hard discs used under Acorn developer versions of RISC OS (v3.8) should be re-formatted to the new RISC OS 4 format. This is not relevant to most users but a soft-loadable version of this Acorn distributed RISC OS 4 'beta test' was leaked on the internet so if you're still using it and re-formatted your HD, upgrade properly to RISC OS 4 or go back to 3.6/3.7.

RISC OS on netBook ("Ron") is



The pleasant countryside location was packed with some of the biggest names in the RISC OS world

Ace reporter, Alasdair Bailey, eavesdrops on a RISC OS developers meeting

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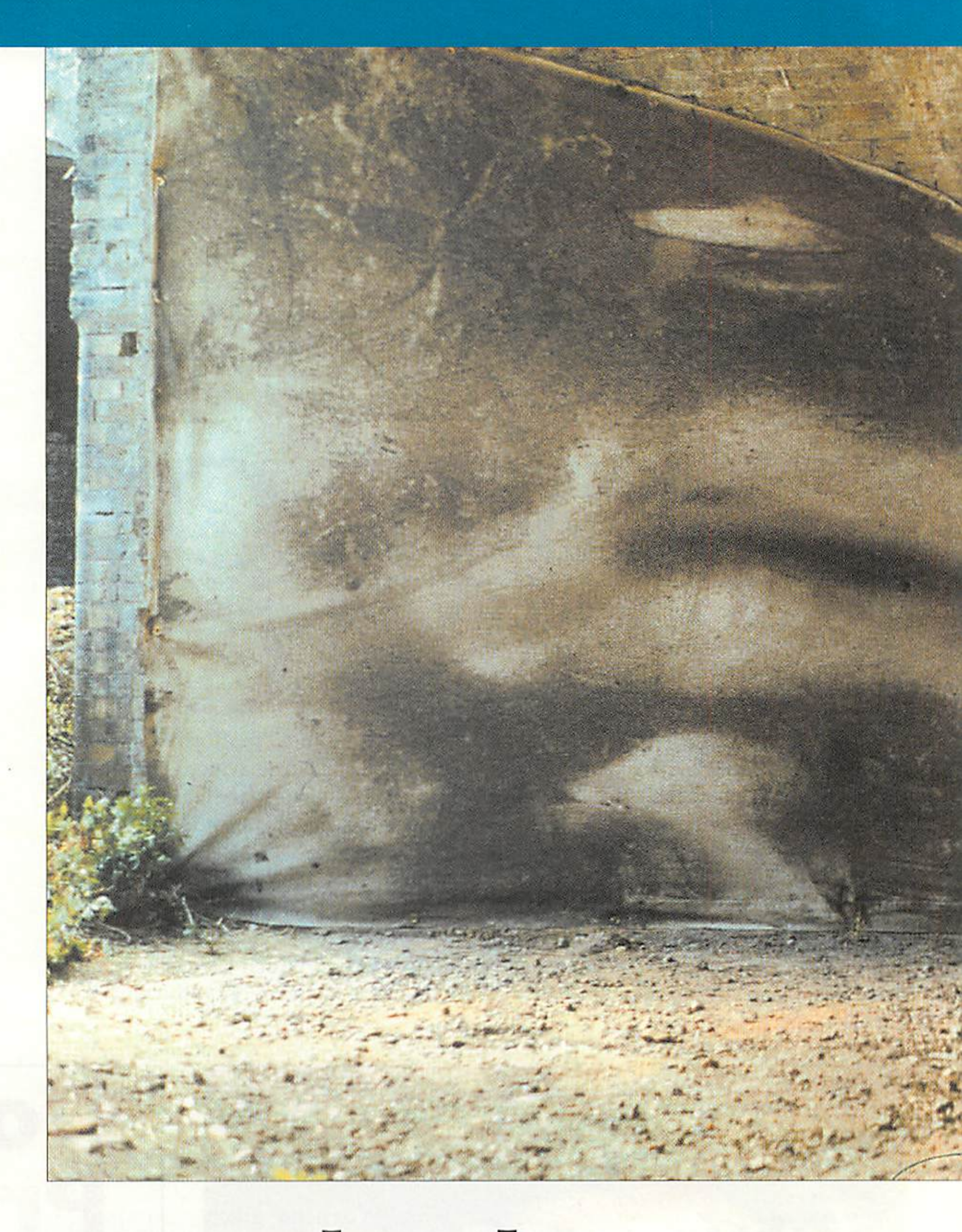
the latest scheme from the masterminds at RISCOS Ltd. to extend the appeal of RISC OS further than its existing desktop stalwarts. The netBook is Psion's latest high-end sub-laptop computer which contains a StrongARM SA1100 processor clocked at 190MHz along with a 640x480 256-colour touch screen display. This specification makes it an ideal platform for RISC OS. The operating system could be supplied on Compact Flash solid-state memory or on traditional ROM chips to replace the EPOC OS from Psion which is included on the netBook by default.

Paul Middleton shed light on the new product which RISCOS Ltd. are currently working on at the end of the day's events. He revealed that the hope is to be able to sell "Ron" and a netBook with 32Mb or 64Mb RAM for around £999, but the future cost of memory will very much affect the final selling price. However, considerable development work is needed and it is estimated that two full-time staff would need assigning to the project.

RISCOS Ltd. are currently looking into ways of obtaining the estimated £50,000 of capital required for the software side of the project. RISCOS Ltd itself will not be selling the netBook, which will be bought from the normal RISC OS dealers. It will only be selling "Ron" along with any bundles of other software needed to support RISC OS to netBook file transfer and so on.

This is in keeping with RISCOS Ltd's aim to only develop and sell the operating system and not hardware itself which would put it into competition with the dealers.

All in all it was a very good day with plenty of enthusiasm and perhaps the happiest bunch of RISC OS developers in one place for a very long time. END



Tidal sou

Julian Coleman reveals what he did on New Year's Eve

What did you do for the Millennium night? The chances are you weren't staying up all night babysitting two Risc PCs and assorted audio hardware recording sound effects – and if you were, I want to know because I thought my recordings would be unique.

Crazy? Well that was my first reaction when a local artist came to me with a question: could I record a twelve hour continuous soundtrack of the River Medway over Millennium night from high tide (about 8:00pm) to low tide (about 8.30 am). The next bit was crazier: I said "yes".

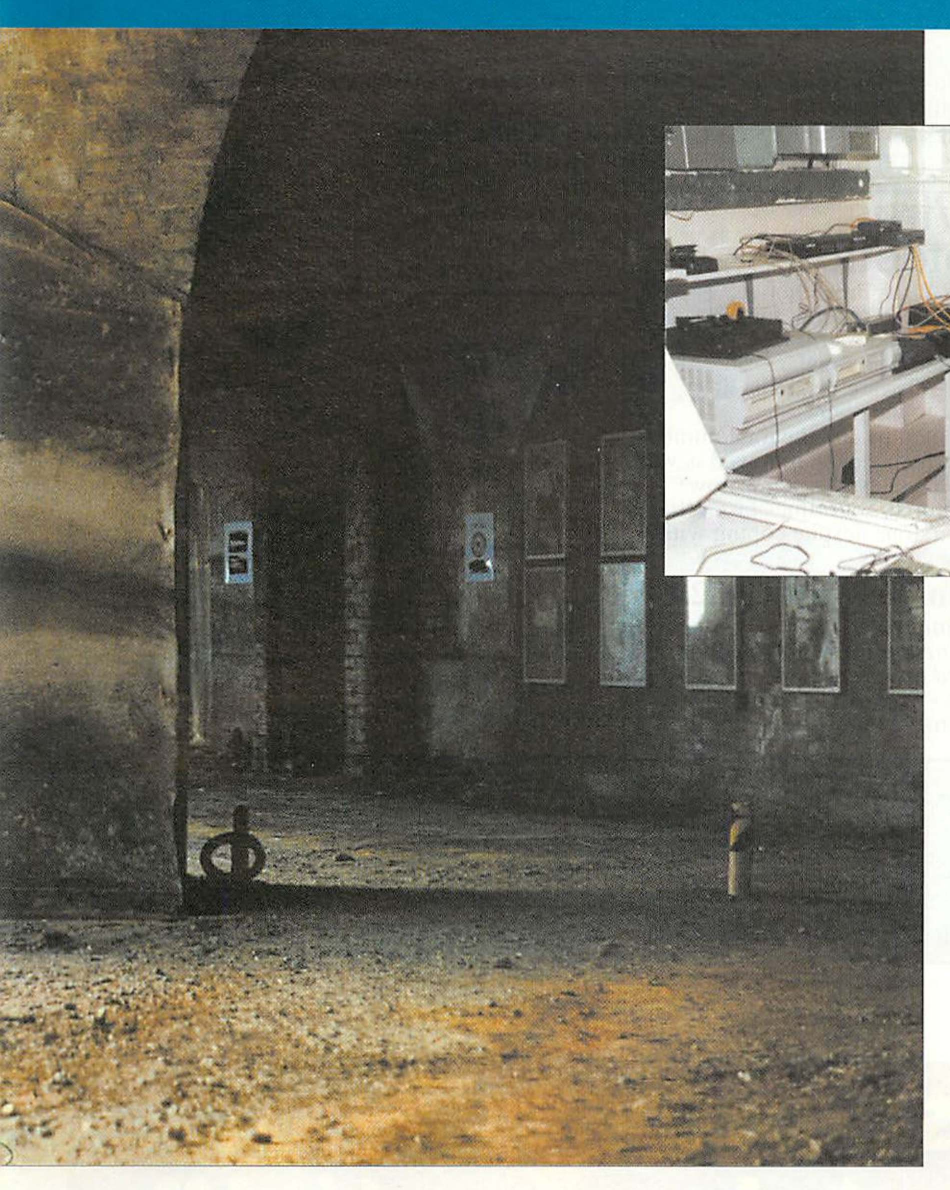
But why? Stephen Turner was the artist in question and he had a promise of some Millennium funding to pursue his particular artistic speciality over the historic night – tide painting. This involves squelching out over the mud flats at low tide to stake out a large canvas, letting the incoming waters muddy it up and returning later to collect the work. In fact, over Millennium night, he and local volunteers did around ten of them. Eventually they will form an exhibition at Chatham Dockyard during March. The sound, he explained, would provide some atmosphere.

Being an arts project, it seemed to me to be admitting artistic failure if I were to resort to the usual recording technique of using a series of tapes and overlapping each junction. It would also be a practical nightmare to replay those recordings over the month of the planned exhibition. Decidedly impractical and boring. Definitely not on – especially when there was no money to fund being on hand for 12 hours a day over four weeks. What I needed was a way to record 12+ hours solid direct-to-disc on a computer and to be able to replay it just by setting it going and going home. No software or hardware I had could cope. I knew of nothing that could cope. So it had to be new. And it had to be a computer-based system.

Then the real problems became apparent. Half a day is approaching 8Gb of 16-bit stereo – and I wouldn't contemplate anything less accurate. I'm not sure about PC recorders but no Acorn software could do it. I could have looked into the PC option but my natural disinclination to venture in that direction was bolstered (very easily it has to be said) by three crucial factors: First was that I already use RISC OS (my PC is a last resort). Second, I couldn't rely on PCs to operate reliably for such time periods bearing in mind that this was a one shot, one chance, no rehearsal event. Third, power.

This was, after all, Millennium Bug night. If the power was to glitch at all, goodbye recording. Goodbye immortality too maybe. Judging by the heatsink and fan on the last Pentium chip I installed, the chip alone consumes about as much power as an entire Risc PC. And I needed two, plus peripherals. So it would, thankfully, have to be RISC OS machines. Great. So now what? I decided to do two parallel recordings, one in conventional stereo, the other in *binaural*, sometimes known as 'dummy head' recording. Binaural isn't much used but it gives a natural surroundsound that stereo never approaches. I like it, so I was determined to do it. That required the two Risc PCs. It also meant using some decent microphones, a custom-built (by me) low power, low noise microphone amp system, external Analogue to Digital converters (the ones I used were from MidiMan) and digital input cards in the Risc PCs.

In theory that sounds fine but the software to run the cards wasn't available – Irlam's software simply won't carry on for such a long period so was unusable, well who'd have guessed anyone would want that? The



nds

only answer was to write it. Irlam was happy to send the programming details needed, I was quick to realise it was beyond me. To the rescue came David Gamble who agreed to write it for me (thanks David). We didn't have much time, and in the event the software was ready with only a few hours to spare. But so far as I can tell – no I haven't yet listened intently to all 25 plus hours of recording – it worked flawlessly.

But what of the power? In the event I was able to house the recording software in the old harbourmaster building in Chatham Dockyard which is on the river edge. That had power. But SeaBoard admitted they could not guarantee supply. Millennium Bugs didn't enter into it, they said, that was all fixed, but winter storms could knock out supplies or cause glitches. So, since I wanted to be free of such problems, I rigged up my own supply.

I toyed with taking my machines to bits and rigging a car battery system to provide the necessary DC voltages. But that's not easy given that car batteries hover around 13 volts and you need to supply a steady 12 volts – no headroom for regulation unless you use extra batteries. That started to look complicated, expensive and risky and I'd rather leave the Risc PCs in one piece. So I took another tack: 240 volts AC was provided by an inverter powered from a hefty 12 volt car battery which was itself topped up by a charger unit. The inverter powered all the crucial bits: the two Risc PC bases, the A/D converters and the mic amps. Both Risc PCs were, of course, stripped of any unwanted drives or podules to reduce power demand. It also powered a MidiMan DigiPatch bay which allowed me to record DAT backups of both channels.

The DATs were powered from the mains but two of them had their own internal battery backups so would continue even if the power went down. The single monitor (on a switch box) was powered from the mains too as it would have used too much power and wasn't that crucial.

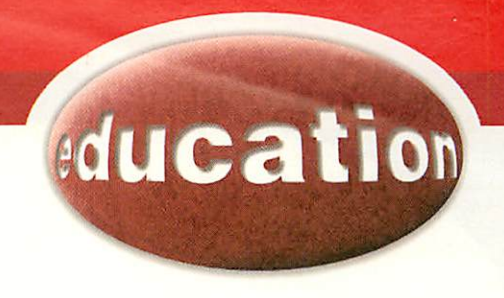
The other piece of the jigsaw was a custom-built microphone enclosure designed to protect them from whatever weather got thrown at them, but to let the sounds in. That worked pretty well too – wind noise wasn't too severe. You can hear the rain but that's OK, it was after all part of what went on that night, and the sounds were clear.

On a personal level I'm most relieved that unwanted noises were kept very low – recording outside in whatever weather appeared was never going to be easy, and recording the kind of quiet that descends at 5:00am after the revelries (though there were still a few fireworks going off even then) was asking for trouble.

But it worked, and more or less as designed. Phew. I now have two large drives covered in audio files ready for playback at the exhibition.

I have to say some of the sounds are simply stunning. The midnight cacophony of fireworks aside, the sounds before dawn were sometimes quite wonderful. If you are in the vicinity come March, the exhibition will be on at the Church in Chatham Dockyard. The canvases will be there, so will two computers: a Risc PC playing back the stereo recording as background sounds and another, probably an A3000, driving a CD player which will allow visitors to select highlights of the binaural recording to which they can listen on headphones and that, incidentally, will be run using some software written here that should make it impossible for anyone to corrupt the computer.

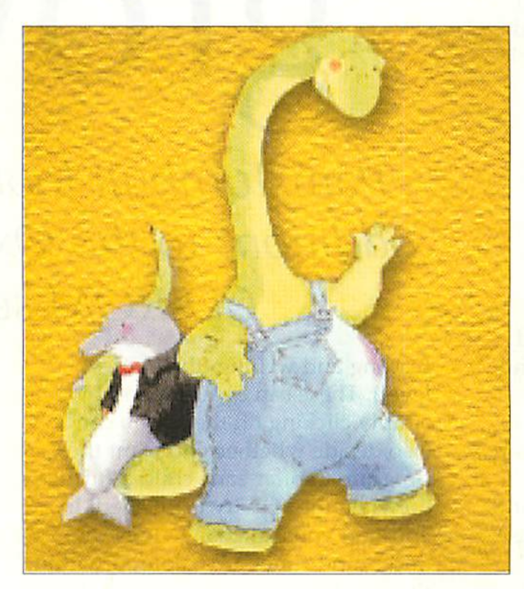
Hopefully this will be a showcase not just of the art but also of what can be done with RISC OS-powered hardware as well as demonstrating what we can do with it. If you are in the area – come along. END



Best of old and new

Sherston (01666 843200) have a new literacy product for Reception and Year 1 called the Big ABC. The aim of the program is to develop key phonological skills with 30 rhymes and over 100 activities. Large text with clear and colourful graphics is backed up by extensive and narrated on-screen help and teacher control to allow you to select letters and activities. In addition there are record-keeping facilities.

This is based on the Big ABC Book In the Letters, Sounds and Rhymes strand of the Oxford Literacy Web and actually supplements two additional CD-ROMs also due for a Spring release – Sound Stories and Sound Activities. The cost of each CD-ROM is £35 each.



Books for schools

We could see a school book price war following the decision by Internet companies *Schoolsco* and *WH Smith Online* to target the school book buying market.

The school book market, which is worth over £250 million a year, has been relatively unmoved by the advent of Internet bookselling, largely because of the failure of most online stores to discount school text books. Schoolsco, who works in partnership with WH Smith Online is offering to discount every single school book using official order procedures via fax and e-mail with schools invoiced in the time-honoured fashion.

If you want to see what book are on offer visit www.schools.co.uk with books classified by subject, and the new National Curriculum. "We are aiming to have 20 per cent of this market within two years," said Len Hough, managing director of Schoolsco.

"Schools are highly price conscious, and we are offering them not only better prices, but also faster delivery and full invoicing."

Computers for schools

NOW in its ninth year, Tesco Computers for School may have veered away from Xemplar to find a new home with RM, but Acorn stalwarts will find friendly faces whether they want printers and other peripherals or software from the likes of Anglia, Granada Learning, Inclusive Technology, Longman, New Media, Resource, SEMERC, Sherston, Softease, Tag and Topologika. For full details email TescoCfs@cyborg.co.uk or ring the Helpline on 0870 010 0708.

Contacting me

Pam Turnbull:
educ@acornuser.com

Web watching

Public Record Office
http://learningcurve.pro.gov.uk
Aiming to develop ICT skills among history teacher as well as making most of the high-quality resources to be found at this site. Material you'll find here varies from the Domesday Book and Magna Carta to an extensive collection of political cartoons, posters and photographs displayed in multimedia virtual galleries covering complete topics from the history National Curriculum.

Kidz.net
www.kidznet.co.uk
Not another filtering system but a solution which strips the Internet of relevant sites for you ensuring that sites as accessed quickly and cost effectively. There is a database of over 1000 primary sites divided into six main categories: Education, Sport, Games, Metro (information on day trips and film releases), Little Kidz (simple learning games and stories accessed on or offline) and Topsites recommended by researchers and subscribers.

NRICH – the Online Maths Club
http://www.nrich.maths.org.uk
Created by the National Royal Institution Cambridge Homerton (hence the name) this publishes investigations, problems and puzzles as well as games and information on maths for the under 12s. There are school to school links for teacher and children to compare notes, as well as the chance to publish your schools maths work on the web. There is even advice on setting up your own school Maths Club.

Scottish Cultural Resources Access Network (SCRAN)
http://www.scran.ac.uk
This network is made up of a range of projects bringing together resources from all over the country. Here are two particular gems and though full access if only available to subscribers, there's a lot for the casual tester too.

Software does grow on

Pam Turnbull looks at the two new additions to the Oxford Learning Tree CD-ROM support bank

One of the best features of the Oxford Reading Tree (ORT) scheme is the flexibility and variety of resources available from which teachers can pick and choose to suit their own teaching style and their children's learning needs. The computer is, of course, another tool and having used the earlier Rhyme and Analogy A with great success I happily loaded this CD.

Rhyme and Analogy Volume B contains 18 activities based around OUP's *Rhyme and Analogy* series and in particular, Books 7 to 12: That's Nothing, Rockpool rap, The King's socks, Gran, Gran!, How to kick-start a dragon, and My Home. The manual explains the rationale behind the teaching of phonics and why use an analogical approach.

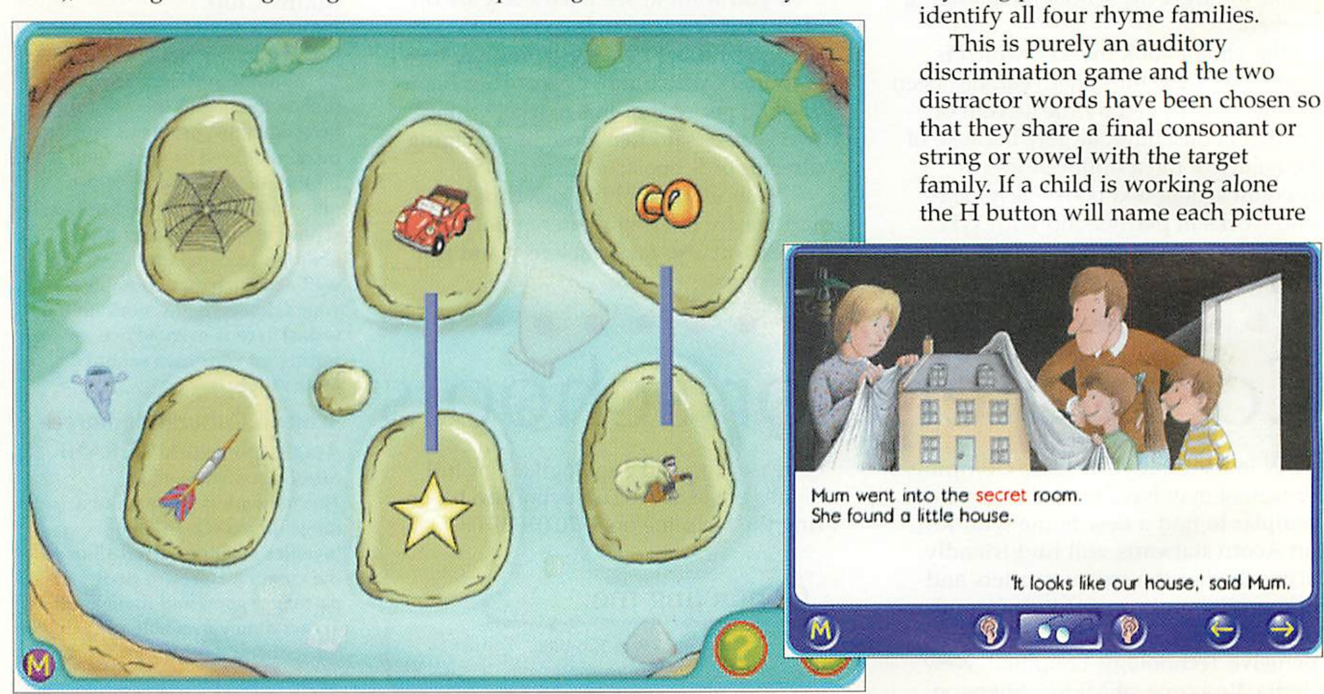
Once loaded you find the main screen displaying the six books on offer. You can limit the choice of book and activity from the Teacher's Menu. This is accessed via the T button on the bottom right-hand of the screen. This menu screen allows you to see what skills the activities for a particular book will expect of the reader; listening (the easiest level), reading and recognising or reading and writing (the hardest level). These can be turned off by simply clicking on them. You can also decide whether you want the program to offer each child a further go when the activity is finished. In addition you can change how the onsets and rimes are coloured within the program.

To anyone who's used the first volume, this will be very familiar. Finally there is the record-keeping screen which logs the activities each child has completed and is automatically saved to the hard disk then updated each time the software is used.

So what do children get to do? Depending on what activities you've chosen these will automatically load when the child decides which book to explore. As each activity is loaded instructions are given and these can be heard as many times as necessary as can the help facility. The manual is very helpful when deciding which activities to give each child.

Information on the individual books contain a list of the rhyme families they contain and full information of the Games and skill levels involved. For instance, Book 8, Rockpool Rap deals with the rhymes of blob, snow, ball and car. There are three activities associated with each book and here the listening activity contains six pictures of two separate rhyming pairs and children had to identify all four rhyme families.

This is purely an auditory discrimination game and the two distractor words have been chosen so that they share a final consonant or string or vowel with the target family. If a child is working alone the H button will name each picture





trees

in turn so clarifying any misunderstandings about what they are seeing – although the drawing and text are clear and appealing.

The games are very nicely put together, not repetitive in feel though activities are similar, well presented, with good differentiation between skills and levels of understanding required.

I particularly liked the reading and writing activities which asked to make their own rhymes from two sounds using their knowledge of onset and rime, or to find anagrams. These require children to reinforce and consolidate their on and off computer work.

Moving on to Stage 4 Talking Stories this too presents six books to choose from: House for Sale, The New House, Come In!, The Secret Room, The Play and The Storm. These core readers should be read in order initially but the software allows children to choose whichever book they want.

The reading software allows children to listen to the story read to them; to read the words themselves, only clicking on individual words they are unsure of and so hear a 'real' voice pronounce these for them. Alternatively they can click and listen to a whole sentence following the individually highlighted words on screen.

Teachers can set up a list of children (or group name) in advance so children can access their own programme. Similar to Rhyme and Analogy in layout the Teacher's Screen allows you to specify which reading system you want a particular child to use and which of three activities you want children to have access to – word, text or sentence level or a combination.

You can also enable a shortcut to the activities rather than having to read the whole book first. Settings are saved to the hard disk as are children's records – if you've opted to install the software on to the hard disk. Successfully completed activities are shaded blue but no judgement is made about how, or how long a group/child took to complete an activity.

This can be printed out though you'll have to add the date yourself with a pen. Personally I'd like a little more information within the record keeping. Children found the talking stories highly motivating, even if they had read the books before. I found them particularly good for instilling into children a sense of expression which can be lost in Big Book and group reading sessions.

Combined with Leni Harper's reading style are Alex Brychta's animations easily accessed via the spectacles icon for those children new to computerised talking stories. The activities follow on seamlessly and, with simple narrated instructions and help only a click away, it allows children to experiment and try out their knowledge in a non-judgemental setting. The objectives fit with the National Literacy Framework for Year 1, Term 2 and though the format is the same for each book the activities become harder as children read through the six.

As well as consolidating and practising the spelling and reading of initial, final and medial letter sounds, word level activities cover reading and spelling words ending in ss, st, pl and nd as well as identifying separate phonemes within clusters and blending phonemes in words with clusters. Incorrect attempts are met with an explanation and good clear sounding out of the phoneme, blends, digraphs and so on.

Sentence level work is harder and may need some whole class input before this activity is attempted as it is concerned with checking that a sentence makes sense and how full





stops and capital letters affect reading. Finally text level activities ask children to re-tell the stories in a sentence sequencing activity. I was very impressed by the activities which are not too long and are well supported by advice and help within the program. From a teaching perspective the manual is excellent telling you exactly what to expect in each book and activity which makes the program accessible to those not using this reading scheme.

I've used this very successfully with individuals and the whole class, and found it easy to set up and use with the different abilities of children within the group with even the most reluctant reader eager to see what animation and sound effect will greet them next. I was a little concerned that some of my children would not read but just click and move on, but careful use of plenary sessions encouraged children to share ideas and want to re-visit, explore and extend what they had come across.

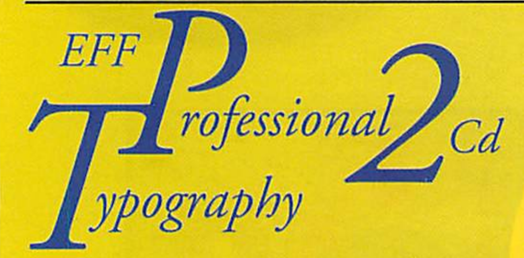
With both these programs, children will get more out of the software activities and feed back this learning into their understanding of the ORT books if you use the scheme in class. However, reading and spelling strategies are helped even if children have never come across Wilf, Wilma or Biff in their lives before. A superb addition to the teacher's literacy toolkit. END

Product details

Product:	ORT Rhyme & Analogy Activities Volume B
Ages:	4-6
Price:	£45
Product:	ORT Talking Stories Stage 4
Ages:	5-7
Price:	£40
Supplier:	Sherston Software, Angel House, Sherston, Malmesbury, Wiltshire SN16 0LH
Tel:	(+44/0) 1666 843200
Fax:	(+44/0) 1666 843216
E-mail:	sales@sherston.co.uk
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Rambles through Acorn



Mike Cook turns over a leaf or two

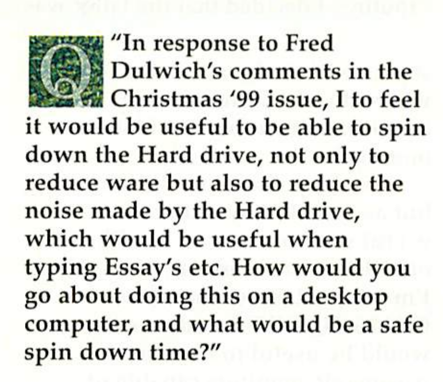
I was reading the article that Colin Sutton wrote about Pace in last month's magazine and I remembered a little known fact concerning Pace and the BBC Micro. Pace, along with Superior Software the producers of *Chucky Egg*, were the first companies ever to take advertising in a computer game. Nowadays this is big business, especially in consoles like the Playstation where companies can pay hundreds of thousands of pounds to have there advert appear in a game.

Back in 1984 Pace paid just £25 to have their name displayed on the track side of the Database Software *Micro Olympics* game. A shrewd move as it turns out because the game went on to sell 100,000 copies – as they say: not many people know that.

Another thing, if Pace's share price was considered to have gone through the roof in October it must be considered in the stratosphere by now. Since I started working here the shares have gone up by 14 times, the stock market must know I now work here.

I know that there has been trouble accessing my Web site lately. What has happened is that my old University has blocked access to my site because I don't work there anymore. They keep changing their minds and alternately block and unblocked it.

Therefore, I think it best if I make other arrangements, I don't know exactly where it will be going yet but by the time you read this you should be able to access it from the link in the *Acorn User* Web site. First up is some feedback concerning hard disc spin down, S. Evans would also like to do this:



"In response to Fred Dulwich's comments in the Christmas '99 issue, I to feel it would be useful to be able to spin down the Hard drive, not only to reduce ware but also to reduce the noise made by the Hard drive, which would be useful when typing Essay's etc. How would you go about doing this on a desktop computer, and what would be a safe spin down time?"

I was all set to answer this when Erik Groenhuis contacted me with his solution:



"With interest I read the question of Fred Dulwich about the 'Spin down delay' feature on RISC OS. Long time ago it also struck me why this option is only available on portables. The reason I want to use it is for those quiet evenings when the whirr of the hard disk is by far the loudest sound.

"To make spin control easier I developed a utility called !Spin, with which you can spin down any ADFS hard disk you may have and set their individual spindown delay values. It is freely available on my Web site http://www.xs4all.nl/~erikgrnh.

"As concerns your remark about the wear and tear of the disks: Initially I thought that the stress of spinning the disk up and down has no great influence on the lifetime. After reading some specifications I changed my mind.

"A typical manufacturer's specs (Maxtor) will give you a lifetime of 5 years, this is equal to 43,800 hours continuous operation, and 50,000 start/stop cycles. This averages to about one spindown per 50 minutes. Another (DiamondMax 68000 series) gives 3 year warranty, 26,280 hours and 40,000 start/stop cycles, an average of 40 minutes per spin down. This means spinning the drive down should not be done unthinkingly."

This neatly illustrates the extra stresses that turning a mechanical device on and off produce.

Now in the January issue Joanne Woolf asks about transferring a cassette recording to CD. I got several offers from readers to do this for her but I don't want them being swamped with requests from others. Interestingly no one offered this as a commercial service using Acorn

---

Remember the ancient Amstrad PCW to Acorn linkage needed? Andy Suter has been rummaging on the Net:



I found this on the Web at http://www.locomotive.com/

LocoScript Software
Phone 08700 736427

LocoLink for Windows (3" PCW)	**£69.95**
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equipment. Our very own Bruce Goatly, who has done a lot of transfers from vinyl to CD, has some comments to make about what sort of results you could expect.



"No doubt there are companies that do this, but these tend to want to make at least 10. If you go in any music instrument shop you will be able to pick up a free magazine called *Making Music*, these have advertisements in them for this sort of service.

"However, Joanne needs to be aware that the sound quality will be pretty poor, cassettes are generally a low-fi medium, particularly in comparison with CDs, because of the prevalence of tape noise. It would be better to work from a reel-to-reel master, if one exists.

"I recently did this quite successfully for my wife's band's first album, which originally appeared only on cassette, the difference in sound clarity was phenomenal. The cost of a CD blank is between £1.40 and £0.65, so the medium isn't expensive.

"The main cost when done commercially is the time taken in sampling the original, this is done in real time, tidying and cleaning the sample a bit and then burning the CD. I just do it for fun."

I can confirm that this process takes a lot more time than you might think. My experience of doing this is that it takes at least four times longer as the source material you are using. So for a half hour recording it is likely to take you at least two hours.

Our own Mike Buckingham wants some advice regarding monitors:



"We have several old Arc monitors, complete with computers, that are fed with analogue RGB from the old Arcs. The socket is, as you will recall, a standard video SCART and is indeed labelled VCR. So, the obvious thought, they should work plugged into a video SCART out. Well no, not on either video I tried. Audio works ok, video is blank. So, the possibilities are that either Acorn wired things differently, that would be no surprise, or that modern video kit does not deliver separate RGB signals. If the former, where do I find the relevant connection data for the old Acorn monitor?

"I've long since lost the manuals but as I recall they didn't have useful stuff in anyway – unlike the old BBC micro manuals. If the latter I'm tempted to use the Sony CXA1585Q RGB decoder as it would be useful to have some reasonable monitors capable of running from composite video. Of course this could be a fool's quest. But if this is logically a reasonable course of action I'll give it a go. Any words of wisdom would be useful."



The SCART socket on the Acorn computers fitted with them was indeed a standard wiring. As you have found most video recorders do not produce an RGB video output. Some of the more expensive ones do but most output composite video or SVHS video. So in order for your idea to work you would need to convert from composite video to RGB, this is not so easy.

I did look for the Sony chip you mentioned on their Web site but couldn't find it. I also failed to find it at any of my suppliers. However you will need to put quite a few components round any decoder chip, the main one here being an analogue delay line.

Layout of any such circuit is also critical so you will probably have to go to a printed circuit board rather than a prototype layout.

Finally I have been having a long running conversation with Gareth Cumella through e-mail and I thought you might like to see some of it. Basically for reasons best known to himself he is trying to modify data files from the game *High Risc Racing*. He contacted me asking how a data file could be displayed as a sprite and so I sent him a copy of my application *RawRead*, he then wrote:



"Thanks for sending me RawRead. Although while playing around with it, I noticed that some data files could not be read, either because RawRead doesn't have the feature to read them yet or because the files were compressed with some sort of routine. I decided that the latter was the most obvious, mainly because the files came up all 'fuzzed' and 'pure' data files came up with lines.



All *RawRead* does is to display a data file as an 8-bit image. Therefore, by definition, there is no data file that it can't cope with. If a file contains data that is a compressed image you are not going to get *RawRead* to display the image, as you say you need to decompress it into a bit-mapped image first. You are probably right in thinking that compressed data shows up fuzzy as lines indicate there is a lack of redundancy in the data. Note that if an image is 16- or 32-bits per pixel you won't get an image either, that's were *RawRead32* comes in.

David Wright has an idea for a project:



"I was also wondering if, as a Pace employee, you could knock together a project to combine my old Pace analogue sat receiver with my redundant NC to get digital television free of subs! Now that would be a useful project. Thanks for all the entertainment you've given me over the years."



This idea sorry is a non-starter, the analogue tuner on your satellite system won't cope with a digital signal, even if it would you need a demodulator and demultiplexer. Then you would have to feed this transport stream into your computer and it's not fast enough to take it in nor is there an easy way to fit an interface.

Then you need a conditional access smart card system, even for free to air stuff, this is not compatible with the smart card in the NC. Then you would need to decode the MPEG video and audio data, you could just about do this but you are pushing it. Finally you need to reverse engineer an application interpreter engine (about four man-years of software) because the broadcasters keep that to themselves. Apart from that it's a good idea. END

Contacting AU

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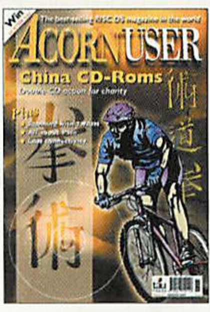
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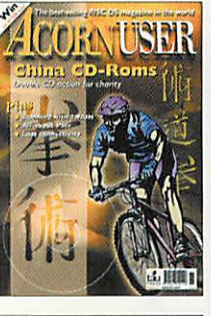
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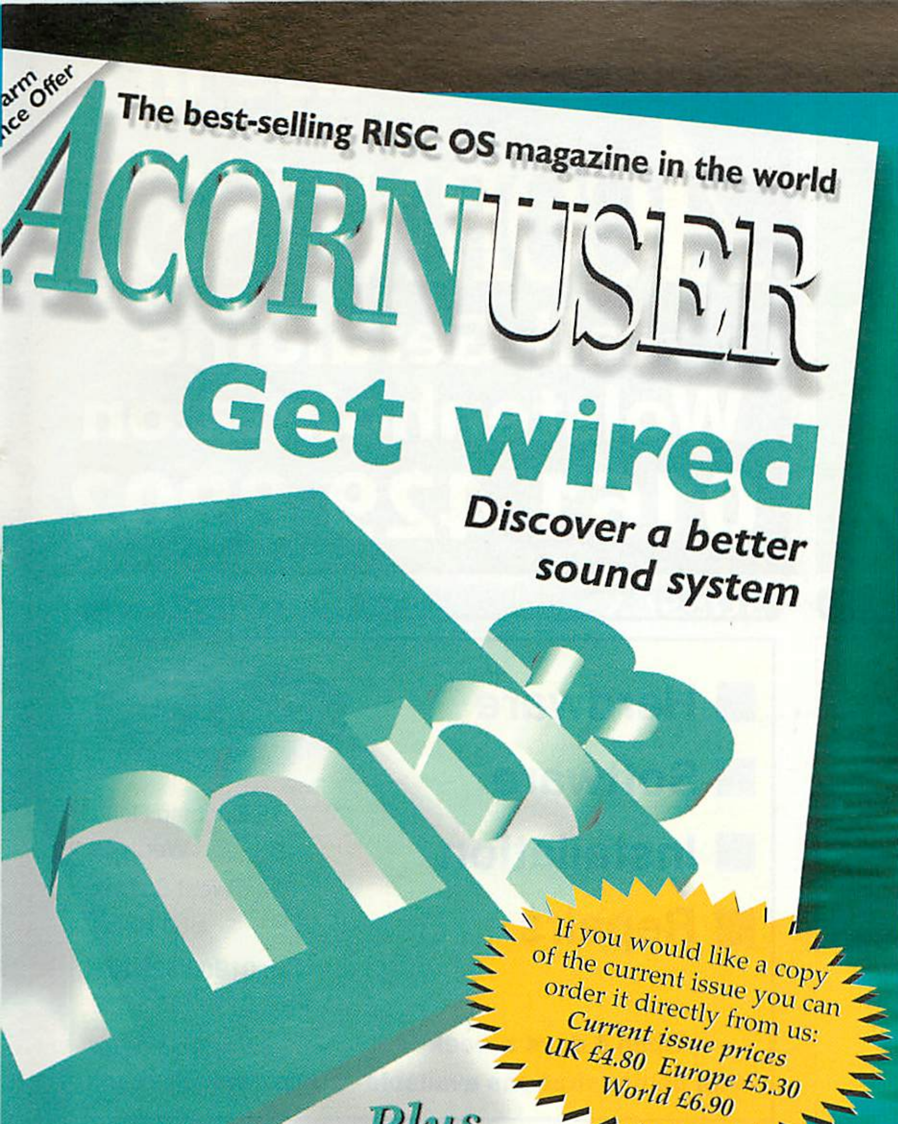


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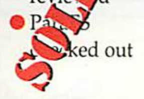
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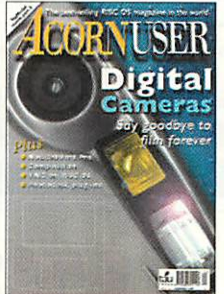
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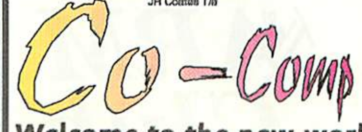
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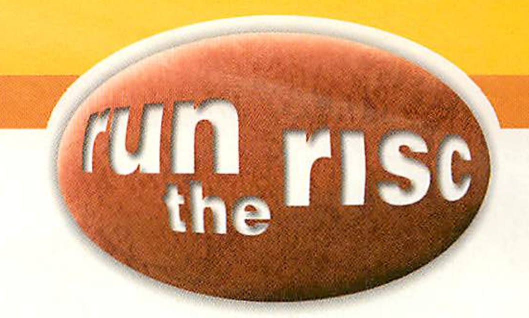
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Can't stand the heat

Mike Cook uses the One Wire bus to take a temperature

Last month we saw how we could use the Dallas One Wire bus or micro LAN to communicate with multiple devices. But so far we have only looked at their serial number chips, however, this month I would like to look at one of the most interesting devices a One Wire thermometer.

Back in April 98 I looked at an I2C thermometer and it proved to be most popular judging from my post bag. There was only two small snags with it, first it was a surface-mounted device so that handling was a bit tricky and second you could only have eight thermometers on the bus because that was the limit of the address range.

No such restrictions with the One Wire bus, you can have an unlimited number of devices, oh well, let's say limited only by the depth of your pocket. Also the package is a simple three-lead one just like a transistor. In fact one of the leads is unused, but more of that later.

The device is the DS1820, it requires no external components and measures between -55C to +125C in 0.5C increments. The temperature is read as a 9-bit digital value and typically takes about 25mS to perform a conversion. Figure I shows the outline for the package, all that is needed is the Ground and the data lines. The Vdd line is an optional power line that should not be used in the interface circuit I have used in this series so far.

The reason is that the interface circuit has a floating earth which is not wise to use with a separate supply because the supply also has to float to avoid any damage to the device. All in all a bit risky so it's best avoided. The advantage of using a separate power supply is that all the devices on the bus can be commanded to do their conversion at the same time and so you only have to read them separately.

If the devices are powered from the bus, as I have done here there is only enough power available for one device at a time to perform a conversion. This means that it takes about half a second per device to measure a temperature. So for a bus with twenty devices you will only be able to scan the temperature every ten seconds.

Also it is recommended that this parasitic power is used only at temperatures below 100C, if either of these are a handicap we will see in later months how we can use a separate supply. The DS1820

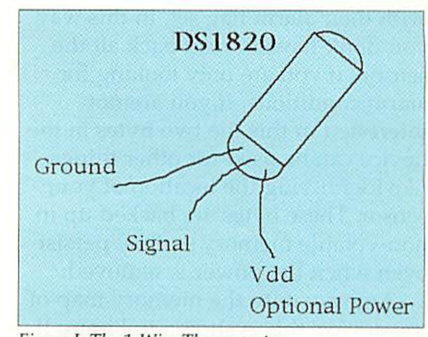


Figure I: The 1-Wire Thermometer

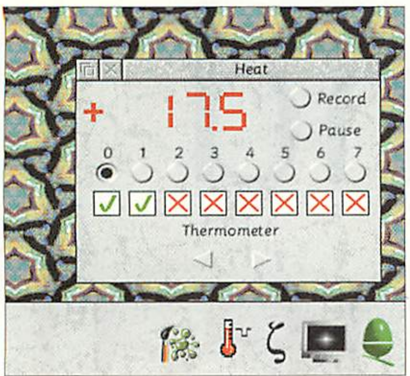
measures temperature by counting the number of cycles from an oscillator in a fixed period of time. The trick is that the oscillator is made of components that are are sensitive to temperature. If you know anything about physics you will realise that the relationship between temperature and oscillator count is not going to be linear. It is linearised in this chip by pre-loading the oscillator counter with a number that compensates for the non-linearity.

At the end of any temperature conversion there is always some counts left over, that haven't quite made it up to the next half-degree division. This number can be used to calculate an even more accurate measure of the temperature. However, unfortunately the resolution of this higher measure changes with temperature so the number of decimal places it is sensible to use changes as well. This is something that doesn't seem to worry students nowadays but it should, just because some measure gives a result to six decimal places doesn't mean that you should quote those places if the accuracy is not justified.

In addition to the measurement of temperature there is an alarm flag that is set if the temperature strays outside a preset maximum or minimum value. You can send

DS1820 specific commands

Hex	*Name*	*Comments*
BE	Read Scratchpad	Read 9 bytes from memory, can be terminated early with a reset;
4E	Write Scratchpad	Write the two user/alarm bytes;
48	Copy Scratchpad	Transfer bytes to the E2 memory;
B8	Recall E2	Transfer E2 memory to scratchpad, happens automatically on power up;
44	Convert	Performs a temperature conversion, needs half a second before any more commands;
B4	Read power supply	Returns 0 if parasite power or 1 if externally powered.



The software running

commands that only apply to devices with their alarm flag set, in this way you don't have to read back all the sensors if you are only looking for alarm conditions. If you are not interested in this the two bytes in the device can be used for other things like identifying the location of your sensor. These bytes are backed up in non-volatile memory so they persist even when the power is removed.

Anyway onto the memory map of the device, this is shown in Figure II. It is split up into two parts, a volatile scratch pad area and two bytes of E2 RAM (pronounced ee squared RAM). Each time you write into the user bytes of the scratchpad it is automatically transferred to the E2. The first two bytes in the scratchpad make up the measured temperature, these are in twos complement form to handle both positive and negative temperatures.

This is handy because it is the same way the computer handles numbers, the only difference being is that our computer uses four bytes to express an integer. It is easy to convert this 16-bit measure to a 32-bit number by sign extending it. This involves copying the 16-bit value into an integer variable and then looking at the most significant bit of the 16-bit temperature measurement. If it is set then the top 16-bits of the integer variable need to be set to sign extend the number.

After doing this to get a true temperature measurement in Celsius you have to divide the number by two as the raw number is the number of half degree steps, this needs putting in a floating point or real variable. Bytes 6 and 7 of the scratchpad contain the count remaining after the temperature conversion and the number of counts per degree centigrade that is currently being used. These are the values you need to read if you want a higher resolution reading. You then have to apply the formula:

```
Temperature = Normal reading -
0.25 + (Count per degree C - Count
remaining)/Count per degree C
```

to extract a more accurate reading. Remember the normal reading is the sign-extended divided by two value obtained from bytes 0 and 1 of the scratch pad.

Finally in the last byte in the scratchpad memory is the CRC, this is not actually a real memory location but a byte that is calculated from the other bytes when you read the scratch pad memory. However, it appears just like a ninth byte and you can use this to verify that you have read the preceding bytes correctly.

In order to control this device there are a number of commands that can be sent to it. These are summarised in the table and are described in detail in the data sheet for the device that I put on the last cover CD. Remember that before issuing most of these commands you need to first reset the bus then issue a match ROM command followed by the devices serial number, then send the command you want.

This is repeated for each command and each device. When you issue a "Read Scratchpad" command by sending it &BE the next nine bytes you read are the contents of the scratch pad. However in order to save time if you are only interested in the first two bytes, because this contain the temperature value, you can issue a reset command after you have read them.

In order to illustrate the software needed to read temperature I have written two programs. The first one called *Test4* is a simple BASIC program and is built on last month's *Test3* program.

If you remember this scans the One Wire bus looking for devices and prints out a list of those found. The new program extends this to read the temperature from any DS1820 devices found and displays both the normal

Standard One-Wire commands

33	Read ROM
55	Match ROM
CC	Skip ROM
F0	Search ROM
EC	Alarm Search

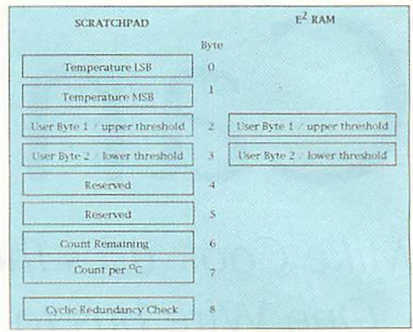


Figure II: The memory map of the DS1820

resolution value and the high resolution value read. The second program is a desktop application called *!Heat*, this is an extension of my earlier I2C temperature measurer and logger but using the One Wire bus. This can cope with a maximum of 42 devices on the bus and displays the value of any one as selected by a radio button.

The boxes underneath each button show whether a temperature-measuring device has been found and it can be clicked to stop a particular device from being recorded. It is the recording function that makes this application so useful, you need to set up a time interval and a file path name from the menu and then all the reading are recorded into a text file with tab-separated fields and line feed (&0A) separated lines.

The first number is the time in seconds from the start of the recording followed by each individual temperature. This format is ideally suited for reading into a spread sheet for creating graphs or performing other calculations. It is also very easy to read this file into your own applications for further processing or display.

If you want to use the alarm function replace the F0 Search ROM command with the EC Alarm Search command and search the bus for a list of devices showing an alarm condition. I tested the programs for negative values by using freezer spray on the sensors, I got down to -15C using this. If you are going to use the sensors in a hostile environment or a liquid, you will need to seal the wires using a bit of epoxy or silicon rubber.

So now you can sense the temperature all over your house you are well on the way to getting the first part of a central-heating controller working. What is missing is the ability to control external devices through this bus so next month we will look at how to do that. END

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Talk back

Many thanks for the review of our DoIT packs in your February issue. While it was great to see them so well received. As your reviewer says, the booklets that accompany the Literacy and Numeracy packs "aren't just a few sheets bunged in... for extra Brownie points rather 40, bound, A4 sheets for each program, giving you 160 sheets for Literacy alone."

Unfortunately we underestimated the cost of producing them, so the price of each Single User Pack is now £30 + VAT, with Site Licence Packs at £45 + VAT.

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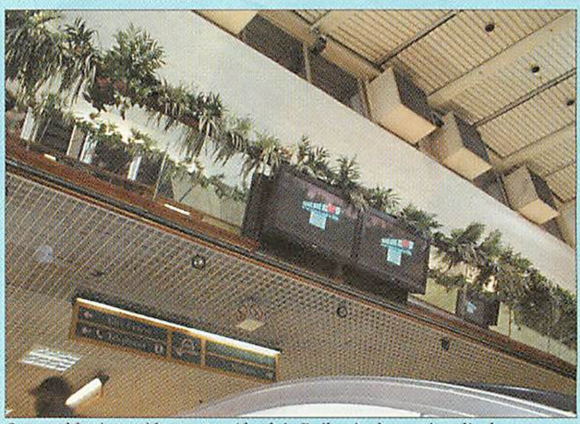
Brian Kerslake
Topologika Software

Optimism Inc

I write to express my support for Steve Turnbull's contention that the RISC OS market is an "inherently optimistic one." (Viewpoint Christmas 1999). I for one would have stopped using computers altogether where it not for the enthusiasm which I have encountered in all corners of the RISC OS world.

However, being a sceptical kind of guy, I do worry about the future. Looking in from the outside, the computing world seems to be coalescing around two mutually exclusive poles which, by turns, entail an allegiance to an open source or proprietary model of software development.

What has this got to do with the RISC OS fraternity? Well, it may be the case that the RISC OS scene is just too small to be at the commercial/ proprietary pole? Many would no doubt say that our OS will be compelled to adopt an open-source model of development by force of circumstance.



Snapped by intrepid reporter Alasdair Bailey is the station display software obviously running on a PC – if only they'd gone for RISC OS

Indeed, many Linux luminaries including Eric Raymond – the darling of the open-sourcers – have implied that this will be the case because of the sheer pace of change. Moreover, Raymond has gone so far as to say that the open-source model will soon be the only way of developing software that "evolves fast enough to stay current in Internet time" (Linux Answers, Premiere Edition).

I for one prefer to take an intermediate position. Rather than conceiving of the open source/proprietary divide as a dichotomy, I prefer to think of these two positions as two end points along a continuum.

If my conception of the state of play in the computing world is correct there may indeed be a future for RISC OS companies who will survive by mixing and matching open source and the proprietary to become value added resellers.

Is this far fetched? Maybe. But spare a thought for companies like Red Hat who seem to have adopted such a strategy with great success. That company currently enjoys a market value of $17.4 billion and has recently acquired Cygnus Software for a paltry $750 million. (Garth Alexander The Sunday Times 19 December 1999).

Proof that the mix and match approach has profitable spin-offs? Only time will tell.

Paul Webb (by e-mail)

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Richard Jozefowski and Sigrid Forche

Millipede is one of those companies that seems to me to have been around forever, but I've never quite felt able to pin down what it actually does. This is partly because it doesn't really sell anything that the general public would actually buy, although at shows it always has well-presented stands exhibiting interesting hardware, the latest being the lovely red Imago motherboard.

Curiosity therefore demanded that I go to Suffolk for a long overdue fact-finding mission. Millipede Electronic Graphics is jointly run by partners Richard Jozefowski and Sigrid Forche. Richard and Sigrid met one summer in Cambridge, where Richard was working for Philips as part of his degree sandwich course in Electrical and Electronic Engineering and Sigrid was working as a plant pathologist.

> *'Customers refer to us as the industry standard'*

'After finishing my degree and a short spell in the west country I moved back to Cambridge,' explains Richard. 'Acorn had only recently set up, home computers were just coming out and it was all very exciting. I was interested in computer graphics, especially video production, so I rather drifted into that and developed my first product while still working for a company on the Cambridge Science Park.

'It was called Prisma 2, and was a graphics enhancement unit which plugged into the BBC Micro. I announced it and got in touch with some of the television production companies. At least two or three of them said that they were interested and so rather naively I thought there must be a huge market. So I set up on my own and moved away from the security of my day job in the middle of 1985. This, of course, took longer than I thought to get established, but two years later in about 1987 I updated it to Prisma 3.'

Sigrid had continued working as a plant pathologist at the Plant Breeding Institute in Cambridge, but in 1987 she left to work full-time for Millipede. The company has been just the two of them since then with outside contractors and associates.

'People often perceive us to be bigger than we are; we have a big corporate image,' adds Richard.

Millipede's 'headquarters' is a purpose-built office attached to Richard and Sigrid's house. Both Richard and Sigrid are equal partners in Millipede, Richard being 'engineering dogsbody' and Sigrid doing the rest of running the business. After producing Prisma, Richard wanted to do something a bit more ambitious; his previous products were all external and bulky.

'What I wanted to design was a board which fitted inside the Acorn computer itself. The only way we could achieve the level of complexity required was by developing our own chip. The board was called Apex and is still our bread and butter product.'

'We have had lots of contractors and associates,' she continues. 'The first customers we had were in broadcast television and that is the field we stayed in. A lot of our products get used in TV game shows. Some of our customers refer to us as "the industry standard". Game shows need equipment which is not too expensive because they are done on a tight budget. They cannot do much preparation and so they need equipment which is responsive to real time. This is what we do.'

Probably Millipede's highest-profile game show 'client' is the recent phenomenon *Who Wants to be a Millionaire?* Thanks to Millipede, Britain's most popular TV programme is RISC OS-powered – you can even spot a Risc PC in the inevitable behind-the-scenes book.

'One of our Apex boards is used to produce the questions and graphics overlay on the TV screen, as well as a special display for Chris Tarrant. The computer also controls the studio voting system', explains Richard.

'They are very strict about publicity,' says Sigrid. 'The problem for us is how to use it. We have not managed to get official photography out of them yet'.

Millipede equipment was also used in the recent mini-Budget, where in-house equipment had previously been used. At the end, one of the directors made a special point that it was the first time that the graphics had not crashed on air, another victory for the RISC OS equipment. As for *Imago*, you'll have to read the other article.

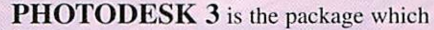
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1 The Courtyard, Southwell Business Park, Portland, Dorset DT5 2NQ, UK
Telephone: +44 (0)1305 822753 Fax: +44 (0)1305 860483
Email: sales@spacetech.co.uk Web: http://www.spacetech.co.uk